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STEEL

FOR FORTY-EIGHT YEARS—IRON TRADE REVIEW

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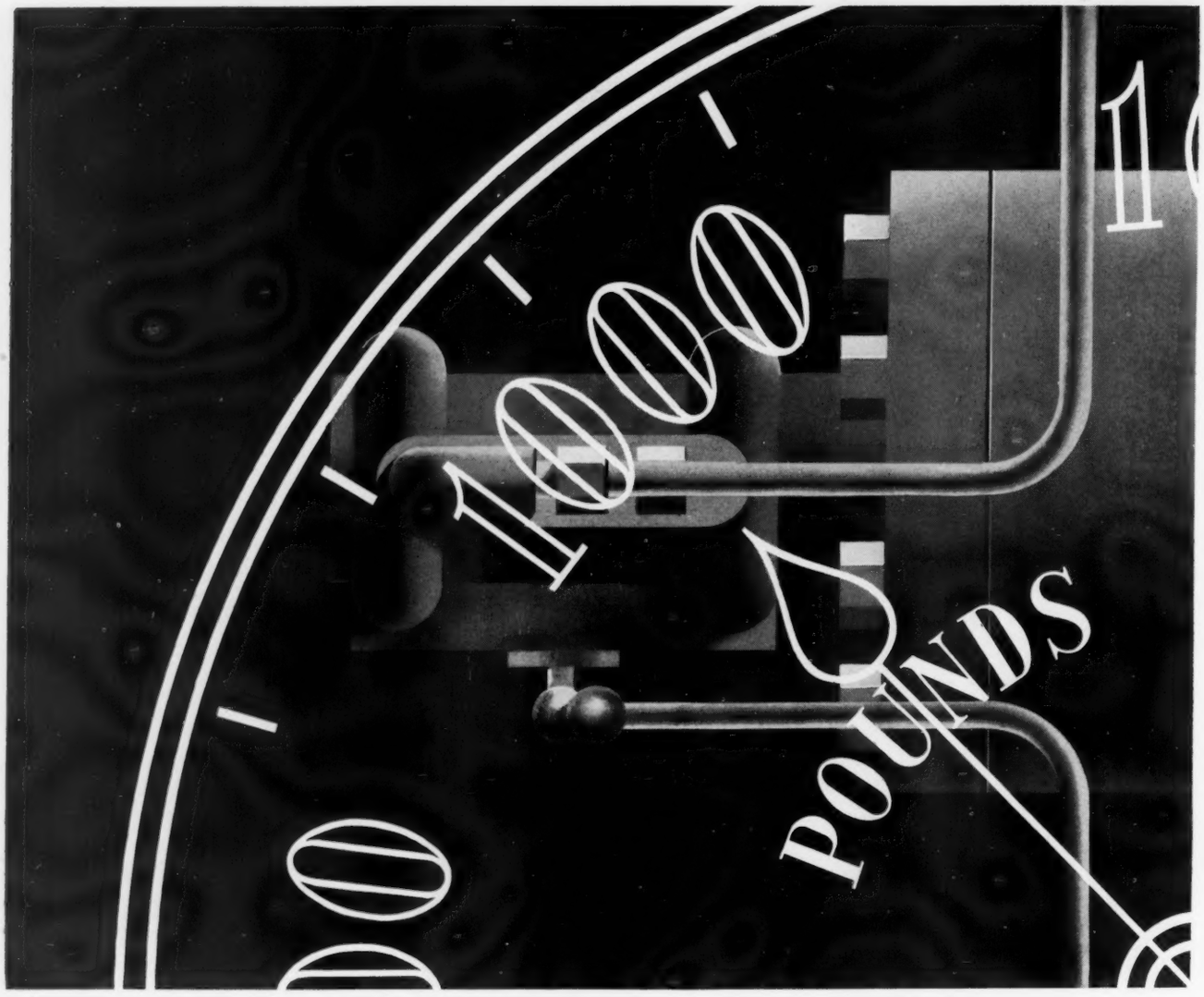

STOPPING TWO LEAKS WITH ONE PLUG

A builder of heavy-duty machine tools encountered a hard-to-solve problem in hydraulic chuck manifolds. Maintaining the 1000-pound pressure necessary for machine precision and efficiency was difficult because the porosity of the iron used permitted oil leaks. Production rejects were as much as 50%—and extra costly because the deficiencies were usually not discovered until after the cylinder had been machined and tested.

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As the Editor Views the News

■ PROFOUND effect of the recent price reductions on the earning capacity of the iron and steel industry is fully revealed (p. 23) by STEEL's analysis. One leading producer estimates wages would have to be reduced 22 per cent to enable it to break even at present prices and on the present volume of production. Once again, the analysis shows, the steel industry has handed its customers the full benefit of the operating efficiencies which enabled it, in the first quarter of this year, practically to break even at a production rate of about 32 per cent. No matter what happens to wages or the operating rate, the industry must remain committed to a continued drastic drive for lower production costs.

• • •

Hold Wages; SWOC To Aid

Harrassed steelmakers continue to see the hand of government thrust against wage reductions. Last week the public contracts board of the department of labor (p. 37) invited representatives of ten leading steel companies and a CIO leader to discuss minimum wages in the steel industry. The meeting, to be held July 20, is considered in informed Washington quarters as inaugurating a move to freeze present wages in the industry. . . Highlights of the week included announcement of a SWOC plan whereby that body stands ready to appoint research committees (p. 25) whose function it will be to analyze the affairs of manufacturing companies and show them how wage cuts can be avoided. But nobody is to lose his job as a result of any improvements in practice.

• • •

No Fishing Trip Planned

Reassurances continue to be given (p. 38) that the national economics commission, now rapidly organizing for its anti-monopoly study, will not be unfriendly to industry. . . Senate civil liberties committee will begin hearings July 18 in connection with the steel strike of 1937; more than 100 witnesses (p. 38) are to be examined. . . Following the July 4 shutdowns steel production last week (p. 29) moved up 8 points to 32 per cent of operating capacity. This compared with 28 per cent for the week prior to July 4. . . Stimulation of buying as a consequence of recent price reductions so far has been felt only in pig iron which has been featured (p. 81) by heavy tonnage placement for third quarter. . . Most of the past week's market developments again were mildly favorable.

• • •

Strong Steel Alloy Free

A new high-yield-strength steel, said to permit safe working loads of 25,000 pounds per square inch, is alloy-free; it is produced (p. 43) by a patented quenching and tempering process. . . . Numerous standards for nonferrous metals were revised (p. 44) at the recent annual meeting of the American Society for Testing Materials. . . . Crawler tractors are commanding increased attention as materials handling units and are serving (p. 45) in a variety of applications. . . . Intricate zinc alloy die castings weighing as little as 0.147-gram (p. 51) are being produced commercially. . . . No flash stripping or grinding is required with a new strip welder (p. 52) provided with a retractable shear unit and an automatic oxyacetylene welding head.

• • •

Centrifugal Force Beaten

Railroad cars with a new pendulum system (p. 56) mark a radical design departure. The car floats on springs said to give a new degree of riding quality. Instead of leaning outward in rounding a curve the pendulum-type car actually banks. . . . By means of a simple device (p. 58) one company encourages its welding operators to keep electrode stub losses to minimum. . . . Cost of forming duralumin airplane parts has been cut sharply (p. 63) by using live rubber in conjunction with forms of negligible cost and by forming as many as 35 parts in one stroke of the press. . . . Several steel companies are deriving economies (p. 66) by using insulating firebrick in soaking pit covers. . . . Scale loss in a forge shop has been reduced from 6 to 2.1 per cent (p. 42) by using a controlled furnace.

E. L. Ahner

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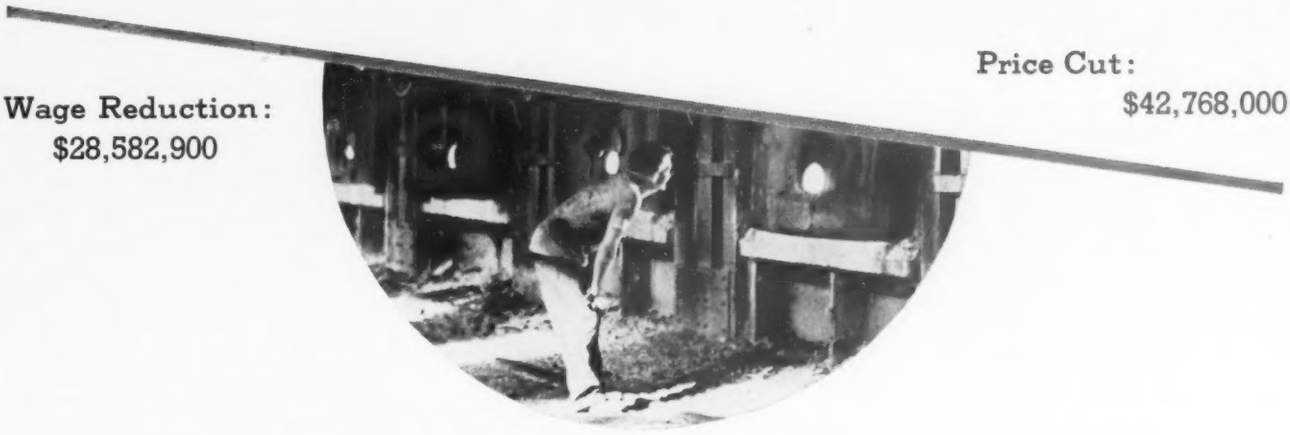


Loss Through Price Reduction Far Outweighs Possible Wage Cut

■ A REDUCTION of 10 per cent in payrolls would compensate the iron and steel industry for only about 66 per cent of the loss taken through its recent price reduction, on the basis of operations in the first half this year.

Payrolls in the period amounted to $285,829,000, with June estimated.

The cut on semifinished steel, finished steel and pig iron for sale would have totaled $42,768,000.

The difference between $42,768,000 and $28,582,900 (wage cut) is $14,185,000, net loss on the transaction.

The industry operated at 31.5 per cent in the first quarter and 30.7 in the second.

The theoretical price loss is determined first by applying the recent price reductions specifically to the various classes and tonnages of semifinished and finished steel made for sale in the first quarter, which made up the 4,337,166 gross tons, as reported by the American Iron and Steel institute.

The official figures for the second quarter are not yet available, but since the rate of operations in that period was close to the first, it is a fair assumption a similar tonnage was made, and a similar loss would have been sustained.

Thus, the sacrifice on the semifinished and finished steel products alone would have been $37,088,000. To this must be added $5,680,000, represented by a cut of $4 a ton on the 1,420,015 tons of merchant pig iron in the first half.

The industry's actual net loss in the first quarter, as reported in financial statements, was $5,000,000. It would be difficult to estimate the figure for the second quarter—even though operations were little changed—owing to the price cutting which preceded the announcement of June 24.

The break-even point apparently has been raised substantially from a low of 32 per cent. It reached this point—despite high wages—through improvements and economies in operations. It is evident that only volume—such as might come through settled business conditions—and further economies, can offset the loss taken voluntarily by the industry, wage reduction or no wage reduction.

Producers Trying To Hold Their Markets

■ AS the steel industry adjusts itself to changed conditions — following elimination of differentials in base prices and establishment of numerous new basing points on a parity with Pittsburgh — one decision apparently is uppermost in the minds of practically all producers.

That is, every effort will be made to protect former markets and to continue to serve old customers.

The new situation, it is considered, will make this difficult, but not impossible, in most cases. In a few products and localities profit margin, it is said, will be so small that the sacrifice would be too great.

Most steelmakers assert they "will continue competition and will try to hold all customers."

It is pointed out that most of the uncertainty results from reduction in prices and elimination of former differentials at the same time new basing points are established, on the same price level as Pittsburgh. Either of these changes might have been met singly without so much confusion.

Developments have been so rapid in the past fortnight that producers and consumers alike have been unable to adjust themselves, with the result that buying has not developed the volume that might have been expected.

Less "cross hauling" of steel, and a tendency to localize business in areas adjacent to basing points, are anticipated. For example, it will be difficult for Pittsburgh and other mills to ship material into the switching districts of Chicago,

Birmingham and other points, where the former base price was higher than the Pittsburgh price, but now is the same. The amount of freight to be absorbed would make the transaction unprofitable.

On deliveries outside these centers, where all mills must absorb some freight, there is a better chance for competition, and the farther such areas are from the competing mills, the more competitive the business becomes. Thus, a Pittsburgh or Cleveland mill will be able to compete on material for delivery to Peoria, Ill., Omaha, Nebr., and other consuming points, to which Chicago mills have a freight charge balancing in some degree the rate from Pittsburgh.

Similarly, Chicago mills will find it difficult to sell in the Pittsburgh district, since its base price is even with mills in that district.

Some consumers may move their plants with a view to improving their position in respect to buying material and selling their products. Others may change their products; a few already have indicated their intention of doing so.

In many instances, however, the cost of the steel used in a product is so small — in comparison with other factors, such as labor, taxes, and the selling price of the product itself—that the change in steel cost, either up or down, will make slight difference. Hence, it is likely that the effect will be studied for some time before any drastic changes are made.

Railroad income from the handling of raw materials for steelworks will not be reduced, but the carriers fear a reduction in tonnage of finished steel shipments in both long and short hauls. Trucking may cut deeply into their traffic.

A larger traffic is expected to move from mills along the Ohio river to points in the South and Southwest. Already much steel is carried by water to Memphis, New Orleans and Houston. More stocks may be carried at these points.

One railroad has announced its intention to buy its steel at the mill farthest from point of delivery, when the delivered price is the same, in order to obtain the benefit of freight charges.

Carriers Save On Repairs

There is some compensation for the carriers in that savings of $3 to $7 per ton will be made on much of the steel they buy for car repairs and construction. No change was made in steel rails and track material, but the current price of $42.50 per ton for rails figures out at 1.89c per pound, 16 per cent lower than the new price on merchant bars, despite the fact rails are a specialty and involve some expense not incurred in manufacture of bars.

In 1937 railroads bought about 1,800,000 tons of track material and almost an equal tonnage of other steel. On the basis of this volume the new prices offer savings of $5,000,000 to $7,500,000. With the carriers limiting purchases at present to the absolute minimum the financial effect of the lower quotations will be of less effect. To roads with programs for carbuilding savings of about $50 per car are provided, compared with prices of a month ago.

The situation now facing steelmakers and consumers is similar to that in the pig iron industry at the time of establishment of NRA, when prices were quoted at furnaces instead of a limited number of bases. Many difficulties arose and for a time there was great confusion, though buying habits were not greatly changed. Most furnaces continue to supply the same customers as formerly, shipping into competitors' territory.

The opinion prevails that adjustments will be made as time passes, and some of the low points in the price structure will be raised to give a better balance.

Steel warehouses have made various reductions in line with lower mill prices, but until they can determine what changes they must make in sources of supply they have no definite base on which to figure. One possibility is the broader application of the Philadelphia pricing plan, which breaks down

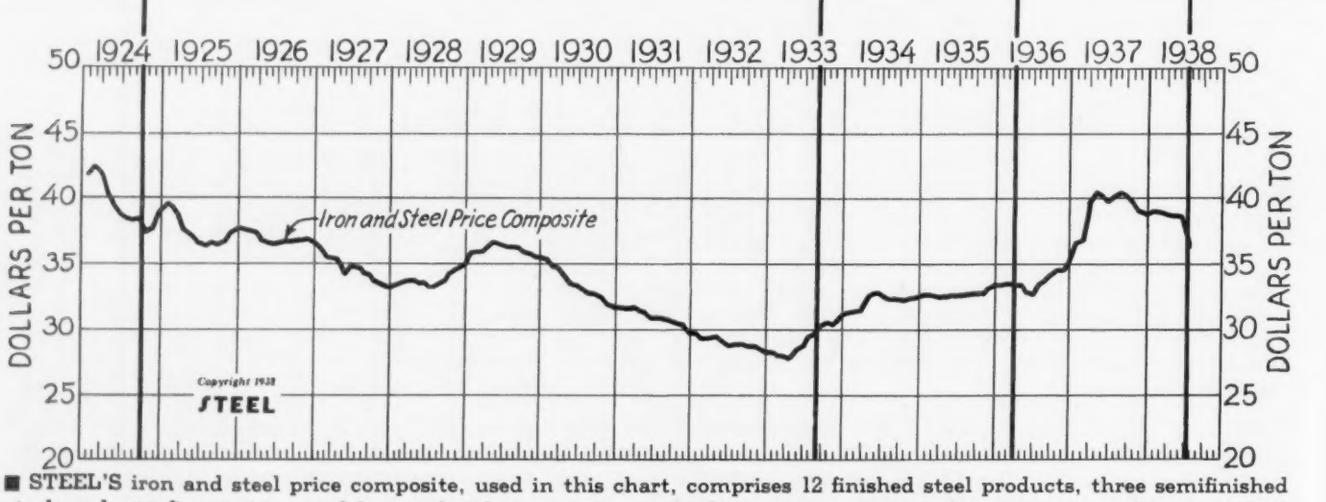
Iron and Steel Price Structure

SEPTEMBER, 1924: Federal trade commission issued "cease and desist" order against Pittsburgh plus. The industry complied "insofar as practical," setting up a multiple basing point system, with differentials lower than freight from Pittsburgh. Government apparently accepted the industry's solution of the problem.

AUGUST, 1933: Iron and steel code of fair competition formulated under NRA, continuing the multiple basing point system. Code abandoned May 27, 1935, when Supreme Court declared NRA unconstitutional.

MARCH, 1936: After sharp competition, as an effort at stabilization, steelmakers announced all prices quoted would be "open," and uniformly applied, agreeing to publish price changes whenever made. This continued up until the recession set in.

JUNE 24, 1938: Basing point system in effect since 1924 revised; differentials at Chicago and Birmingham eliminated, with establishment of numerous basing points on a parity with Pittsburgh. Steel prices reduced $3 to $7 a ton; pig iron $4.



■ STEEL'S iron and steel price composite, used in this chart, comprises 12 finished steel products, three semifinished steel products, five pig iron, and five steelworks scrap items at leading centers. For graphic comparison of finished steel prices, steelworks operations, and steel wage rates see STEEL, July 11, p. 16

quantity brackets into smaller ranges, considered as better representing cost relations in handling various tonnages. In general warehousemen in the North do not expect the volume of business from store to be changed materially.

Whether the installation of continuous sheet and strip mills within the past few years has had some influence in precipitating the present situation is difficult to determine. It may be a coincidence, but at all the new basing points except Coatesville, Pa., and Claymont, Del., continuous mills have been built recently, and added largely to output of flat-rolled steel. Mills have been put into service at Chicago, Granite City, Ill., Detroit, Buffalo, Sparrows Point, Md., Cleveland, Birmingham, Middletown, Youngstown, and also at Weirton, W. Va., and Steubenville, O., the latter two being approximately in the Pittsburgh district.

With the change in basing points and elimination of practically all differentials in price over Pittsburgh the last vestige of the old Pittsburgh plus plan of pricing has disappeared. Formerly this was just what the name indicated, the Pittsburgh base price, with freight to destination added.

After the federal trade commission in 1924 issued a cease and de-

(*Please turn to Page* 101)

SWOC Proposes "Joint Research" To Show Firms How To Keep Up Wages

■ RESEARCH committees composed of representatives of management and union are proposed in a handbook entitled "Production Problems," issued last week by the Steel Workers Organizing committee and sent to all local lodges and "529 companies" with which SWOC says it has contracts.

The introduction states:

"This handbook tells about ways of making industry able to meet the demands of labor for higher wages, shorter hours, security of the job and better conditions. It is about things a union can do **after** it has established itself and has won collective bargaining."

Bargain for Best Terms

"The first business of any union," it continues, "is to bargain with the employer and get the best terms he will grant. But the union will find eventually that there is a point beyond which the employer will not or cannot go."

It is from this point on that the handbook outlines a plan whereby it may convince the employer—by means of research—that he can pay more or reduce hours, or both. The union plan is to study the business and suggest means for improvements whereby income may be increased.

Philip Murray, SWOC chairman, in a letter accompanying copies sent to employers said he does not expect a mere reading of the proposal will "immediately revolutionize relationships between our local lodges and managements," but he hopes that "it will promote friendly and constructive relationships."

The handbook points to SWOC's intention to take a hand in management. It lists ten "Do's and Dont's" for the research committeemen in their study of production problems, related to wages and hours.

"Do not begin to try anything described in this handbook," in bold type it warns committeemen, "until the position of the union is secure, and it has a permanent and satisfactory contractual relations with the employer."

After this the company should be approached for an agreement to undertake joint research "and this agreement should contain the following conditions:

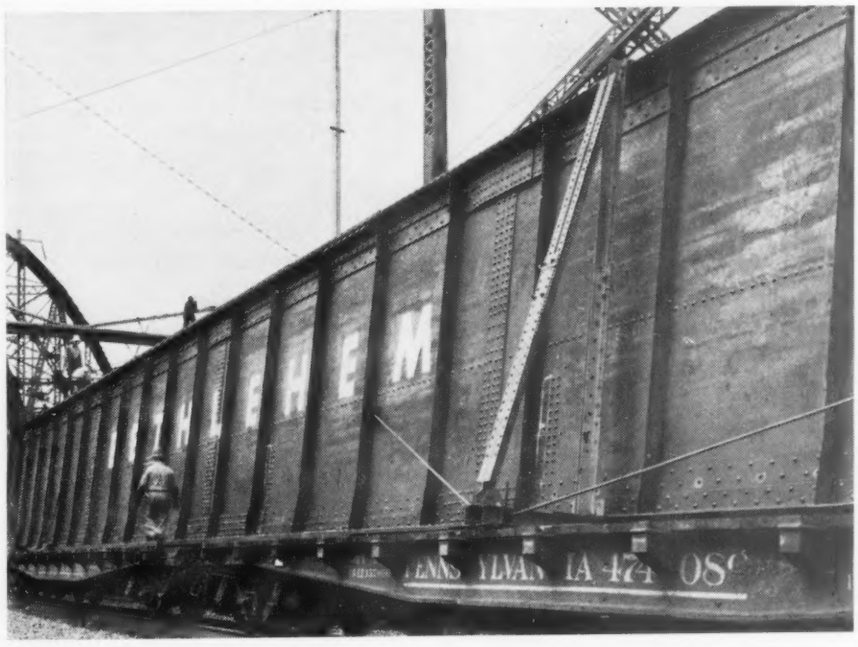
"1. The union agrees to co-operate with management to reduce costs, enlarge sales, improve quality and in general to advance the interests of the industry.

"2. The management agrees to share equitably with the union any benefits so obtained, in the form of increased employment, better working conditions, increased wages or decreased hours.

"3. Nobody is to lose his job as a result of any improvement that is installed. If ways are discovered to do more work with less labor they are to be put in gradually and then only with the consent of the union.

"4. The research must be truly joint in every respect. All facts and plans are to be revealed to the union committee, and its understanding and consent must be obtained at every step."

Huge Girder Spans Three Flat Cars



■ **Close-up of one of two 80-ton girders fabricated at Bethlehem Steel Co.'s Pottstown, Pa. works for an overpass for route No. 1 over Pennsylvania railroad tracks at Winans, Md. They are the largest girders ever fabricated at Pottstown, and largest ever shipped by the Reading railroad. Each is 140 feet long, 12 feet deep, and required three flat cars to carry it**

At a mountain camp, near Salisbury, Somerset county, Pennsylvania, last week a two-week "school" session was opened by the Steel Workers Organizing committee. The school was organized for the purpose of instructing committeemen and rank and filers in unionization methods and policy. Those attending represented lodges in New York, Maryland, West Virginia, Ohio, Kentucky, Pennsylvania. SWOC announced the names of several officials of smaller independent steel companies, who, it said, had accepted invitations to speak.

German Steel Is Setting New Record; British, French Output Slipping

By VINCENT DELPORT

European Manager, STEEL

LONDON

■ OUTSTANDING in the quarterly review of iron and steel activity in Europe is the situation in Germany. At the present rate that country is operating on the basis of an annual steel output of 22,000,000 metric tons —exclusive of Austria—which compares with its record production of 19,690,000 tons in 1937. This is due mainly to its own national requirements, as its export trade is declining.

So far this year, steel output in Great Britain has scarcely held its own with 1937, while in France production has been about 15 per cent less than in the comparable period last year.

Moreover, in Germany the means for production are increasing, owing to the developments in connection with the Hermann Goering reich works, which will as previously referred in STEEL exploit low-grade native iron ore. These new works are expected to start with an output of 1,000,000 tons a year, to be increased to 4,000,000 by the end of the four-year plan in 1940. Considering developments in other works, and intensified production in Austria, the annual capacity for steelmaking in Greater Germany by 1940 is expected to reach 30,000,000 tons.

Outside this burst of activity in Germany, little has happened recently to revive the iron and steel trade in Europe. Many factors are still operating, particularly as regards international complications, which are not conducive to confidence.

Wars Restrain Expansion

While the situation in Czechoslovakia resecting the Sudeten German problem has eased somewhat, continuation of the Spanish civil war with its numerous implications as regards the actions of foreign countries, and the state of war in China, are sufficient to restrain any tendency toward expansion of business, except manufacture of war material and related products.

Added to these unfavorable influences, considerable uncertainty prevailed until the end of June concerning the future of the European steel entente. As a result, export markets have been calm, buyers and consumers not wishing to commit themselves in the expectation that the price structure, maintained with difficulty by the entente, might crumble.

Actually, it was only at the Paris meeting June 19 that the management committee of the entente was able to announce that the agreement, which was to expire June 30, was renewed until Dec. 31, 1940. This means that the subsidiary international selling syndicates, controlled by the entente, will continue to carry on until that date.

The reason for this uncertinty and delay was the firm stand taken by an important Belgian concern that demanded a material increase in its quota. To meet this, either the other Belgian producers would have had to agree to a reduction of their own quota in order that the Belgian total remain unchanged, or the other member-countries would have had to agree to an increased quota for Belgium. Neither solution was acceptable, and at a meeting in Rome at the end of May, the negotiations ended in a deadlock.

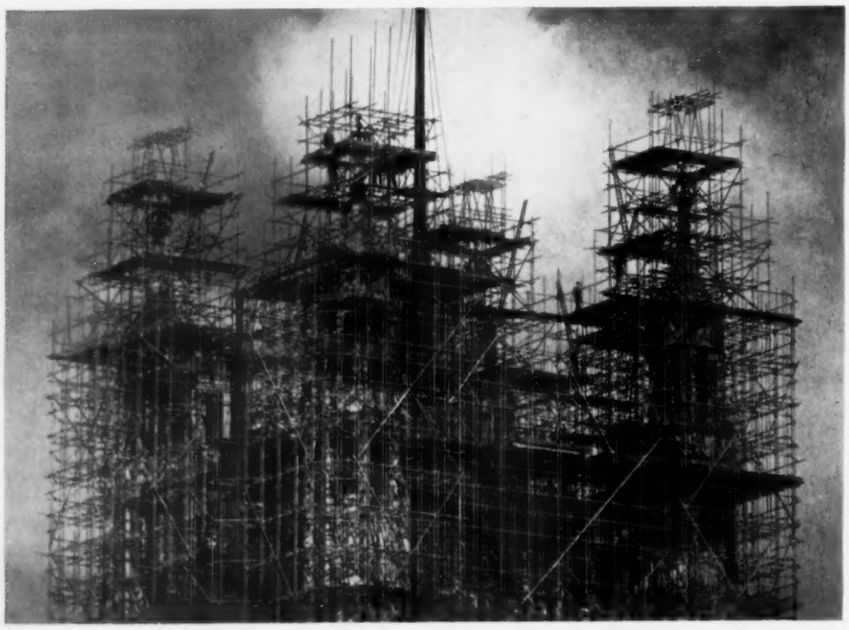
Demand Withdrawn

However, in view of the fact all other members had agreed to renewal on the existing basis, and thanks to the discreet intervention by the Belgian government, the dissident concern finally agreed to withdraw its demand, and the entente has now entered a new lease of life.

The extension goes only as far as the end of 1940, because at that time the German syndicates expire. In view of the developments in the German iron and steel industry resulting from the annexation of Austria and the establishment of the new Goering works, it is foreseen quotas will have to be altered next time the agreement comes up for renewal.

All the decisions made at Paris were arrived at in agreement with

Victoria Tower, London, Encased in Steel Tubes



■ **View of the four stone turrets, one at each corner of the great Victoria Tower of the House of Parliament, London, was almost obliterated recently by a forest of steel tube scaffolding. Reconstruction of the aged stonework was made comparatively easy by the use of more than 300,000 feet (57 miles) of tubes**

representatives of the British Iron and Steel federation, and arrangements previously concluded between the entente and the federation remain in force. There is also reason to believe a *modus vivendi* has been arrived at between the entente and representatives of some leading American steel interests as regards competition in certain export markets.

At the Paris meeting it was decided in principle, and the decision was confirmed at a subsequent meeting at Chateau d'Ardennes in Belgium, that all basic export prices fixed by the entente for controlled products would remain at the existing level, and no important change is expected until next fall at the earliest. It is understood, however, subsidiary sales offices may at times be authorized to modify c.i.f. prices for certain specific products and markets to meet strong outside competition.

Now that these important questions have been dealt with, it is hoped export markets will become a little more active, especially as it is felt buyers have depleted their stocks. At any rate, assuming no further disturbing factors arise, the ground is now well prepared for the fall campaign.

Generally speaking, and taking account of seasonal influences, conditions in the iron and steel trades of the leading European producing-countries cannot be said to have deteriorated greatly in the past three months.

In Great Britain there has been a definite slowing in the volume of new business, both in domestic and export markets. This is due largely to the fact consumers are well supplied with material they accumulated several months ago when there was a fear of iron and steel shortage. Large tonnages are in stock, mainly of foreign origin and resulting from contracts placed a year or more ago. Since then, delayed deliveries were made and had to be accepted, even though the need was no longer urgent. However, it is true that apart from government contracts for the defense program, industrial activities generally have receded from the high level attained during the greater part of 1937.

Export Figures Abnormal

This is supported by iron and steel import and export figures for the first five months this year. In January, February and March, imports totaled 308,735 tons, 230,402 tons, and 276,785 tons respectively. In April, imports dropped to 61,469 tons, and in May to 55,665. The figures for the first three months of the year were abnormal, whereas those for April and May are below average and show the effect of the re-imposition of the standard duties, early in April for steel and early in May for pig iron.

As regards exports, the monthly figures since January average 172,000 tons. In the corresponding period of 1937 the average was 223,000 tons. For the first five months this year, iron and steel exports totaled 860,111 tons, against 1,114,388 tons from January to May, 1937.

Production figures so far are not much behind the tonnage of the early part of 1937, the output of steel in the first five months being 5,150,400 tons, compared with 5,232,000 tons in the period last year. During the first three months the output was slightly more than in the corresponding months of 1937, but in April and May this year the trend was reversed and a sharp drop occurred, from 1,115,800 tons in March to 938,600 tons in April.

Pig Iron Output Larger

For the first five months this year pig iron output was larger than in 1937, but April and May production figures were lower. The fact must be considered that last year at this time there was a serious shortage of iron and steel, whereas at present producers have accumulated stocks. On May 31, 105 blast furnaces were in operation, compared with 122 on May 31, 1937.

The National Federation of Iron and Steel Merchants was formally established in London June 17. It comprises a number of merchants and holders of supplies, and it is intended to follow the price policy of the British Iron and Steel Federation. Members will obtain special discounts when buying controlled products, and must undertake to fix their retail prices within certain specified limits.

The new organization includes six prominent firms of merchants, but is not yet representative of the whole trade, nor even of an overruling majority. It has the good will of the federation, especially as the establishment of such an organization was recommended in a report presented to parliament a year ago by the Import Duties Advisory committee.

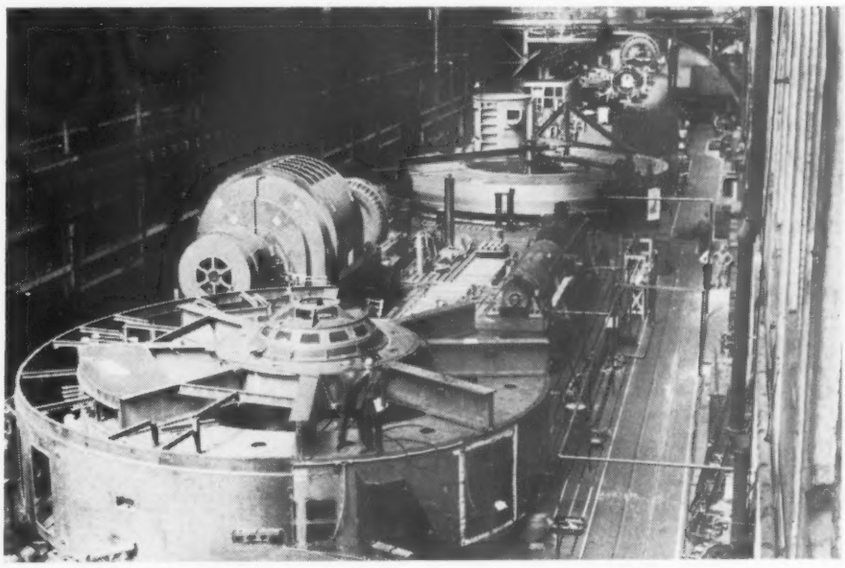
In France, conditions still are uncertain. There is a respite in political strife at the moment because parliamentary activities are suspended until October, and Premier Daladier has been given powers to take steps to remedy present economic difficulties.

As a result, some amendments have been made to the 40-hour week legislation which has been a stumbling block to greater production; measures have been taken to facilitate credit, and a program of public works has been undertaken in addition to the re-armament plans.

With the exception of January, monthly steel production in France has been constantly below the level of the corresponding month of 1937.

(*Please turn to Page* 101)

Power in the Making



■ **In this aisle at Westinghouse Electric & Mfg. Co.'s East Pittsburgh works craftsmen are producing such divergent machines as a generator and a bearing to carry the world's largest telescope. In the foreground is one of the 45,000 kilovolt-ampere water-wheel generators for Pickwick Landing dam in the Tennessee valley. At the left is a synchronous condenser, and in the background is the "horseshoe" bearing on which the Mt. Palomar telescope will turn**

Harvester Claims Report Is Biased

■ CLAIMING bias and injustice to International Harvester Co., Chicago, in the recent report of the federal trade commission on the agricultural implements industry, Sydney G. McAllister, president of the company, has issued a statement in refutation of claims in the report.

Speaking of the report Mr. McAllister says: "Clearly it is shaped throughout as a witch-burning document in which the Harvester company is the witch and the alleged crime is 'dominence.' To prove this charge material facts and natural causes are repeatedly ignored. I believe the American public is interested in fair play and above all wants to hear both sides."

The statement by Mr. McAllister calls attention to the fact that the investigation was *ex parte* and the commission denied the request of the industry for a hearing and opportunity to point out any possible errors in findings.

As to the commission's claim that larger net profits in 1937 than in 1929 were possible only because of undue control the Harvester company points out that the large demand in 1937 resulted from pent-up needs held back during the years of depression. Increased prices of farm implements, claimed in the commission's report as the result of lack of competition, resulted, says Mr. McAllister, from higher wages and other costs and were no greater than in other lines of manufacture, as shown in government statistics.

Steel Houses Out of Chicago's Building Code

■ Steel houses will be banned by Chicago's new building code, if action by city council last week is final. In discussion of the section dealing with steel dwellings, previously approved by a commission of building experts, Alderman James J. McDermott repeatedly referred to the structures as "tin houses." The council rejected the entire section dealing with steel houses.

Jury of Awards Studies Lincoln Welding Papers

■ Papers submitted in the $200,000 award program of the James F. Lincoln arc welding foundation are being judged at Cornell university, Ithaca, N. Y.

Thirty jurors from engineering departments of various colleges and universities will judge the entries, under the direction of Dr. E. E. Dreese, of Ohio state university, chairman of the jury, which convened in Ithaca, July 2. It is expected that the winners will be announced about Sept. 15.

LABOR

WEIRTON EMPLOYES PARADE AGAINST NLRB EXAMINER

■ Weirton Steel Co., Weirton, W. Va., has filed an appeal with the National Labor Relations board against action by Trial Examiner Edward Grandison Smith in excluding the company's chief attorney, Clyde A. Armstrong, from further participation in the hearing of CIO charges against the steel company.

The case has been under hearing for nearly 11 months at Steubenville, O., across the river from Weirton. Armstrong was barred by the examiner on the ground of "defiant, contemptuous and contumacious" behavior in opposing tactics of the board's attorney.

Following this action by the examiner a demonstration was made by Weirton employes, who paraded with banners in Steubenville and hanged the examiner in effigy. The hearing then was transferred to Pittsburgh to avoid further demonstrations.

GRAND JURY CALLED AS C.I.O. PICKETS DEFY COURT

Grand jury of Lake county Illinois, was recalled last week "to consider the open defiance of law and order presented by C.I.O. pickets at the Chicago Hardware Foundry Co., North Chicago, Ill.", according to State Attorney Charles E. Mason. Some 350 pickets are said to have defied a circuit court injunction, having three times defeated efforts of other workers to enter the plant, closed by strike June 6.

Patent to Blaw-Knox on New Tin Plate Process

■ The United States patent office has issued to Blaw-Knox Co., Pittsburgh, a patent on a method of producing tin plate. According to the company this method makes it possible to produce a sound adherent tin coating with the use of less tin than required by previous methods. The scope is indicated by the following allowed patent claims:

"In a process for producing tin plated steel strip, heating the strip to a temperature sufficiently high to anneal and temper the same, gradually cooling said strip while preventing contact with external air, joining portions of strip end to end to form continuous strip with good electrical contact at the joint, and moving the continuous strip uninterruptedly and at a substantially constant speed through the sequential operations of acid pickling, washing, electroplating in a tin bath in which the moving strip constitutes the cathode and passes between anodes distributed along the submerged portions of the strip, washing, and drying, said operations thus producing steel strip coated with an adherent and evenly distributed electro deposit of tin."

The patent was issued on application of John S. Nachtman, who is now associated with the electrochemical processes division of the Blaw-Knox Co.

Steel Frame House for Earthquake Area

■ **Brick house for the California earthquake area was built by Frederick H. Ruppel, president, Latisteel Corp. of California, Pasadena, by placing brick over a steel frame of perpendicular steel studs with lattice - type, light - steel, filler wall panels. Panels are prefabricated to architect's plan and are collapsible, allowing easy transportation and rapid erection. For a description of the Latisteel system as applied to larger buildings see STEEL, March 22, 1937, p. 44**

$2,000,000 for War Test Orders

■ ASSISTANT SECRETARY OF WAR JOHNSON said last week that within the next year $2,000,000 will be spent by the war department in educating industry to produce war materials. He expects that the proposed program will be under way by Sept. 1.

Near the close of the last session of congress, an appropriation of $10,000,000 was made, of which the $2,000,000 is part.

Mr. Johnson announced that small contracts for war supplies will be awarded to firms which do not now produce them, but could do so by making slight changes in their plants. War department experts believe that with experience gained in producing peace-time orders, manufacturers can begin production speedily in war time.

Specific tasks to be carried out in the event of another war have been tentatively assigned to some 10,000 plants.

For an outline of the "educational" plan, as presented by Mr. Johnson before the National Machine Tool Builders' association see STEEL, May 9, p. 15.

Auto Output Snaps Back

■ Automobile production last week was 42,010 units, compared with 25,375 the preceding week and with 115,380 in the corresponding week last year, according to Ward's Reports. Last week's total was the best since the week ended May 28 when 45,120 cars were made.

	Week Ended	
	July 16	July 9
General Motors	17,900	15,175
Chrysler	6,190	4,710
Ford	12,500	1,600
All others	5,420	3,890

Monthly and yearly comparisons will be found on page 34.

FTC Warns Fencemakers

■ Federal trade commission has issued an order against the United Fence Manufacturers' association, Burlington, N. J., and eight producers of snow fence, directing them to cease and desist from concerted efforts to maintain identical delivered prices for their products in violation of the federal trade commission and Robinson-Patman acts.

■ While sales of automatic coal stokers for the first five months this year were 31 per cent less than in the same period in 1937, sales for May increased 37 per cent over April of this year, according to the bureau of census, based on statistics supplied by 112 stoker manufacturers.

District Steel Rates

Percentage of Ingot Capacity Engaged in Leading Districts

	Week ended July 16	Change	Same week 1937	Same week 1936
Pittsburgh	25	+10	88	63
Chicago	32.5	+ 8.5	84	70
Eastern Pa.	27.5	+ 5.5	68	49
Youngstown	30	+ 3	78	76
Wheeling	46	+ 2	91	81
Cleveland	26	+10.5	79	51
Buffalo	35	+ 5	88	84
Birmingham	42	None	96	52
New England	35	+ 2	78	63
Cincinnati	38	+ 2	93	80
St. Louis	18	—15	93	†
Detroit	29	None	97	100
Average	32	+ 8	82	68.5

† Not reported.

Machine Tool Orders Show Gain in June

■ Index of new orders for machine tools, computed by the National Machine Tool Builders' association, Cleveland, advanced to 70.2 for June, from 66.7 in May, compared with 191.8 in June, 1937. Three months average at the end of June was 75.7, compared with 88 in May and 227.6 in June, 1937.

Index of domestic orders was 35.7 in June, compared with 34.8 in May and 137.6 in June of last year. The foreign index was 34.5 for June, compared with 31.9 in May and 54.2 a year ago. Foreign orders comprised 49 per cent of June business in June, compared with 48 per cent in May.

J. & L. Safety Rewarded

■ A "Certificate of Merit" for a safety record in 1937 better than the average for the metal industry and several "Certificates of Honor" for departments with perfect safety records for the year have been awarded the Jones & Laughlin Steel Corp. by the Pennsylvania department of labor and industry.

U. S. STEEL CORP. SHIPMENTS

(Inter-company shipments not included)
(Tons)

	1938	1937	1936	1935
Jan.	518,322	1,149,918	721,414	534,055
Feb.	474,723	1,133,724	676,315	583,137
Mar.	572,199	1,414,399	783,552	668,056
April	501,972	1,343,644	979,907	591,728
May	465,081	1,304,039	984,097	598,915
June	478,057	1,268,550	886,065	578,108
6 mo.	3,010,354	7,614,274	5,031,350	3,553,999
July		1,186,752	950,851	547,794
Aug.		1,107,858	923,703	624,497
Sept.		1,047,962	961,803	614,933
Oct.		792,310	1,007,417	686,741
Nov.		587,241	882,643	681,830
Dec.		489,070	1,067,365	661,515
Y'rly adj.			†40,859	†23,750
Total		12,825,467	10,784,273	7,347,549

†Deduction.

PRODUCTION

■ REBOUNDING from the low level of activity following July 4 the national steel rate last week advanced 8 points to 32 per cent. This not only recouped the holiday loss but put operations on the best basis since April.

Pittsburgh — Rose 10 points from the holiday week to 25 per cent, with probability of further increase this week.

Wheeling — Increase of activity by one producer added 2 points to the operating rate, bringing it to 46 per cent.

Cleveland — Gain of 10.5 points to 26 per cent after the holiday recession, with further increase scheduled for this week.

Youngstown, O. — Advanced 3 points to 30 per cent. Schedule for this week, with 32 of 83 open hearths operating and some bessemers added, will be close to 36 per cent.

Chicago — Advanced 8.5 points to 32.5 per cent, the level of May 1, within 1 point of the highest rate of the year.

Cincinnati — Up 2 points to 38 per cent.

St. Louis — Down 15 points to 18 per cent, the result of hot weather, vacations and other seasonal factors. This is the lowest rate for this year.

Birmingham, Ala. — Unchanged at 42 per cent, with ten open hearths producing. An increase to 50 per cent is indicated for the next few weeks, Republic lighting a 150-ton furnace.

Central eastern seaboard — Gain of 5.5 points from the low of holiday week, to 27.5 per cent. Most mills report little variation from preholiday rates, though ingot stocks are being depleted.

New England — Addition of open hearth capacity caused advance of 2 points to 35 per cent. Schedule for this week may reach as high as 40 per cent.

Detroit — Unchanged at 29 per cent, with six furnaces melting.

Buffalo — Increased bank of orders brought an advance of 5 points in operations, to 35 per cent, the highest since November.

JUNE STEEL SHIPMENTS MAKE SLIGHT INCREASE

■ Shipments of finished steel in June by the United States Steel Corp. totaled 478,057 tons, compared with 465,081 tons in May, an increase of 2.7 per cent. In June, 1937, shipments were 1,268,550 tons. The June total was the first increase since March. For first half shipments amounted to 3,010,354 tons, against 7,614,274 tons in first half last year, a loss of 60 4 per cent. Further comparisons at left.

MEN OF INDUSTRY

■ A. T. KELLER, chief engineer of construction, Bethlehem Steel Co., Bethlehem, Pa., and for 50 years a leading engineer of the steel industry, will retire from active service Sept. 1. He will be succeeded by R. B. Gerhardt, who is assistant chief engineer of construction.

Mr. Keller started as a draftsman in 1888, and has been continuously associated with engineering work in connection with steel plants and steel plant construction. He was initially with Mackintosh-Hemphill Co., Mesta Machine Co. and was chief engineer of the Gary plant of United States Steel Corp. during its erection. He has been with Bethlehem since 1916.

G. S. Comstock, at present superintendent of power and maintenance at the Steelton plant, will succeed Mr. Gerhardt as assistant chief engineer of construction.

♦

Georges Moressee has been appointed president, Association Technique de Fonderie de Belgique, 64, Quai Mativa, Liege, Belgium.

♦

R. A. Eldridge has been appointed traffic manager, Republic Steel Corp., Cleveland. He succeeds J. A. Lindsay Jr., resigned.

♦

J. L. Whitten, formerly with Brown Instrument Co., Philadelphia, has been named sales manager, Lee Wilson Engineering Co., Cleveland.

♦

F. Ellis Johnson, dean of the college of engineering, University of Missouri, has been named dean of the college of engineering, University of Wisconsin.

♦

W. S. McAleer has been named manager, Koppers-Rheolaveur Co., a Koppers Co. affiliate. Since 1930 he has been an engineer in the sales department.

♦

Carl Zapffe Jr. has been appointed a research associate at Battelle Memorial institute, Columbus, O., and has been assigned to an investigation of the solubility of oxides in liquid iron and steel.

♦

H. J. Bauman, vice president, Empire Finished Steel Products Co., Newark, N. J., sailed last week for a five weeks trip abroad. He will visit Germany, Switzerland and Sweden.

♦

Ernest K. Eugene, Chicago structural engineer, has recently been awarded an honorary professional degree in civil engineering by the University of Michigan, in recognition of engineering work on the Illinois Central railroad.

♦

Myron C. Taylor, retired chairman, United States Steel Corp., appointed by President Roosevelt to the inter-governmental committee on refugees, was made chairman of the committee at an organization meeting at Evian-Les-Bains, France, recently.

♦

George P. Passmore has been appointed manager of manufacturing, steam division, South Philadelphia works of Westinghouse Electric & Mfg. Co. He succeeds A. R. Allard who has resigned to accept a vice

G. P. Passmore

presidency of General Steel Castings Corp. Mr. Passmore joined Westinghouse in 1921 as a machinist. Subsequently he filled the positions of shop foreman, tool designer, layout draftsman, superintendent of tool design and superintendent of heavy manufacturing.

♦

Willard Fray has been added to the laboratory staff of Ferro Enamel Corp., Cleveland. He will specialize in cast iron work. He formerly was with Floyd-Wells Co., Royersford, Pa., stove manufacturer.

♦

Prescott B. Jensen, metallurgist for the Fort Wayne, Ind., works of International Harvester Co., Chicago, has been transferred to the new Indianapolis engine plant as head of the metallurgical department. Henry E. Elfner has been moved to Indianapolis as resident engineer; Guy A. Baker, engine inspector, will serve as assistant resident engineer, and Rudolph T. Rudolphson, assistant chief inspector, has been sent to Indianapolis in the same capacity. Sperry A. Fry, heretofore head of the salvage department, Fort Wayne plant, succeeds Mr. Rudolphson.

♦

W. H. Day, who has served Fairbanks, Morse & Co., Worthington Pump Corp., and others in the sales department, has been made vice president in charge of sales for the Peerless Pumps division of Food Machinery Corp., with headquarters in Los Angeles.

♦

T. J. Ess, combustion engineer, Republic Steel Corp., Massillon, O., has resigned to become associated with the Association of Iron and Steel Engineers, Pittsburgh. His chief duties will be the sponsoring of new editorial projects for the association's magazine, *Iron and Steel Engineer*.

♦

John W. Berscheid has retired as superintendent, Fairfield wire works, Tennessee Coal, Iron & Railroad Co., after 48 years of continuous service. He has been succeeded by Jacob J. Phifer, who has been with the United States Steel Corp. since 1920 and was transferred to Fairfield as assistant superintendent on Jan. 1 this year.

♦

George M. Madole, formerly assistant managing director of B. F. Goodrich Co.'s plant in Colombes, France, has been named assistant to the general sales manager of the original equipment tire division, with headquarters at Akron, O. Mr. Madole, a member of the French Legion of Honor, to which he was named by the French government in 1935, has been with Goodrich since 1910.

♦

E. C. Sammons, president, Stoker Manufacturers association, has announced appointment of following chairmen of standing committees for the ensuing year: Advertising and public relations, J. M. McClintock, Illinois Iron & Bolt Co., Chicago; commercial committee, B. O. Fink, Auburn Foundry Inc., Auburn, Ind.; engineering committee, B. M. Guthrie, Fairbanks, Morse & Co., Chicago; legislative committee, R. C. Goddard, Combustioneer division of Steel Products Engineering Co., Springfield, O.; research committee, J. R. Whitehead, Fairbanks, Morse & Co., Chicago; ways and means committee, J. E. Martin, Link-Belt Co., Chicago. Mr. Sammons heads the executive committee which is an elective position.

♦

William J. Daly, formerly Detroit district sales manager for Worthington Pump & Machinery Corp., Harrison, N. J., has been transferred to the corporation's Phila-

delphia office to succeed the late C. H. Shaw. Mr. Daly joined Worthington in 1922 as a student engineer. Since that time he has served as special engineer in air compressor sales; assistant sales manager, Cincinnati works; manager of industrial sales division, and Detroit district sales manager. Mr. Daly will be assisted by W. J. Van Vleck, recently appointed assistant manager at Philadelphia.

♦

Carl Behn has resigned as sales manager, Superior engine division, National Supply Co., and as assistant to the vice president in charge of operations of its engine plants at Philadelphia and Springfield, O., to become a vice president of United American Bosch Corp., Springfield, Mass., where he will also be in charge of all sales divisions. Prior to joining the National Supply Co.,

Carl Behn

he was associated with the Bosch organization from 1923 to 1936, serving in important capacities at Chicago and Detroit.

♦

William B. Johnston, heretofore vice president and treasurer, Ideal Furnace Co., Detroit, has been elected president, to succeed the late Byron H. Edwards. Mr. Johnston has been with the Ideal organization since 1908, and has had experience in all departments, including manufacturing and sales.

Dwight W. Edwards has been elected a director, to fill the vacancy caused by the death of his father.

♦

Thomas Weiskopf, the past two years assistant superintendent, Union Drawn Steel division of Republic Steel Corp., Massillon, O., has been promoted to superintendent, succeeding the late John S. Lynch. Frank A. Garvey has been named assistant superintendent.

Mr. Weiskopf's experience with Union Drawn dates back 35 years. For several years he was manager of the No. 2 plant and later was named superintendent of No. 3 plant, both located in Beaver Falls, Pa.

Mr. Garvey, engaged in special engineering work for the Union Drawn division the past 18 month, previously held major posts in the automotive and machine tool industries.

DIED:

■ HARRY MCLEOD LEWIS, 65, secretary-treasurer, and one of the organizers of Badger Malleable & Mfg. Co., South Milwaukee, Wis., in Milwaukee, July 7. Prior to going to South Milwaukee about 30 years ago, he founded the Peerless Steel Range Works and before that was treasurer, Chicago Stove Works.

♦

Charles H. Richards, 63, an official of All Steel Equipment Co., Aurora, Ill., in Aurora, July 11.

♦

Thomas J. Smith, 64, retired, in Lakewood, O., July 5. He was president of Peters Machine Co. from 1912 until its absorption by the Pennsylvania Rubber & Supply Co. in 1919, at which time he was made a director of the latter company and vice president of its subsidiary, the Cleveland Steel Products Corp.

♦

Emmett L. Burch, 79, president, Bay State Iron Works, Erie, Pa., in that city, recently.

♦

Harry A. Kessler, 45, superintendent of the structural mill, Bethlehem Steel Co., Lackawanna, N. Y., in that city, recently.

♦

Henry Laidlaw, since 1899 Detroit sales manager for the International Steam Pump Co. and its successor, the Worthington Pump & Machinery Corp., in Detroit recently.

♦

Michael J. Walsh, 71, founder and president, M. J. Walsh Machinery Co., Milwaukee, dealer in mechanical equipment, in that city, July 6. He retired in 1933.

♦

Frederick Tschudy, formerly with Tennessee Coal, Iron & Railroad Co., July 5. He had been associated with iron and steel operations in the Birmingham area since 1909. He built the first battery of by-product coke ovens operated by the Tennessee company and served more than ten years as a consulting engineer. Later he went with Woodward Iron Co., retiring in 1928.

Activities of Steel Users, Makers

■ WATSON-STILLMAN Co., Roselle, N. J., has completed an agreement with Duncan Stewart & Co. Ltd., Glasgow, covering the manufacture for the English market of the Watson-Stillman line of hydraulic horizontal extrusion presses, high-speed metal forming presses, powder presses, ingot strippers and other equipment used by the heavy industries. In turn, the Watson-Stillman Co. will manufacture for the American market the Duncan Stewart lines of high-speed steam hydraulic forging presses, vertical rod and tube extrusion presses, air bottle accumulators and similar equipment.

♦

Monarch Machine Tool Co., Sidney, O., has completed a 16 mm colored motion picture film, showing the procedure by which its lathe beds are flame hardened. This film, 100 feet in length, is titled so that it is explanatory of the flame hardening process.

♦

Billings & Spencer Co., Hartford, Conn., has acquired the Windsor Automatic Co. Inc., Windsor, Vt. The business has been moved to Hartford and will be operated as a division of Billings & Spencer. The principal product of the Windsor firm is the Di-matic automatic screw machine.

♦

Seaman Body Corp., Milwaukee, division of Nash Motor Co., Kenosha, Wis., has installed a 500-ton stamping press, built by General Machinery Corp., Hamilton, O. This will produce a one-piece automobile top, including top of the cowl, windshield opening and rear window, 72 x 148 inches. The die space measures 100 x 180 inches. The press is served by an overhead crane handling dies weighing from 60 to 70 tons, and all functions are automatically controlled by electrical apparatus.

♦

National Pressed Steel Roofing Co. of Tennessee, Memphis, Tenn., has been organized to manufacture a variety of products, including turpentine aprons, cups and strips, pressed steel shingles, heavy and light-duty metal drums, tubs and pails. A plant is being erected at Virginia and Kentucky avenues, and operations will begin about Aug. 1. Julian Julenwider, who recently retired as vice president and manager, Memphis Fence & Roofing Co. and the Southern States Iron Roofing Co., is president.

L'ALCHIMISTA
by
GIOVANNI STRADANO
(Born 1536—Died 1605)
Original Painting in Florence, Italy

Ohio Ferro-Alloys Corporation
Canton, Ohio

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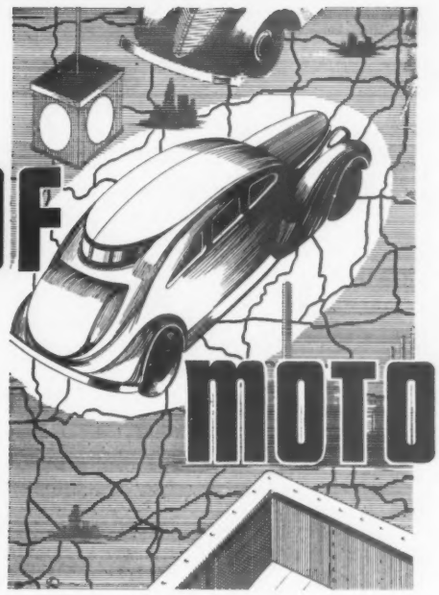
MIRRORS OF MOTORDOM



DETROIT

■ PUBLISHED report that one of the larger automobile companies has negotiated for an estimated 3000 tons of stainless steel for hubcaps, moldings, radiator trim and some interior trim on 1939 models is discounted in trade circles here, as it is doubtful if any of the big three companies would use this much stainless in a year.

Even assuming General Motors lines might make an important shift to this material next year, the buying of the steel would be divided among the various divisions, each of which has different specifications as regards analysis, gage, size and the like. It is understood General Motors has been approached with the idea that the corporation set up central buying of stainless steel for all divisions and thus realize the benefits of lower prices. But such a move is not held likely, since GM some years ago abandoned central buying of materials, with one or two exceptions.

Testing Stainless Hubcaps

GM is known to be doing considerable in the way of road tests on stainless hubcaps for Buick, Olds, Chevrolet and Pontiac, and it is possible one or all of these makes will adopt this type of cap next year.

Chrysler uses a fair amount of stainless on its four lines, and an increase is indicated for next year's jobs. Plymouth, for example, will use a new type of stamped stainless steel side grille molding, replacing a rolled part and requiring an appreciably greater amount of steel without increasing the cost of the part to any extent. Up to the present, however, only about 6 tons of various sizes of stainless has been released by Chrysler for new models.

Prices of the chrome-nickel and straight-chrome stainless steels have not been readjusted downward in company with other steel products, but prices quoted on the chrome-nickel material around Detroit have been running from 3 to 5 cents under the 23½-cent base price on hot strip. On the straight-chrome material prices have held fairly well. It is possible some official pronouncement on this score may be forthcoming shortly to put a definite floor under prices.

Wide disparity often is encountered in stainless prices. For example, the incident is related of a local supplier quoting a price of 34 cents per pound on some material for a Canadian fabricator, this price not including the duty on the steel. The supplier was considerably taken aback to find a Dominion steel interest had quoted a price of only 28 cents per pound on the same material.

The belt-line stainless steel mold-

BY A. H. ALLEN
Detroit Editor, STEEL

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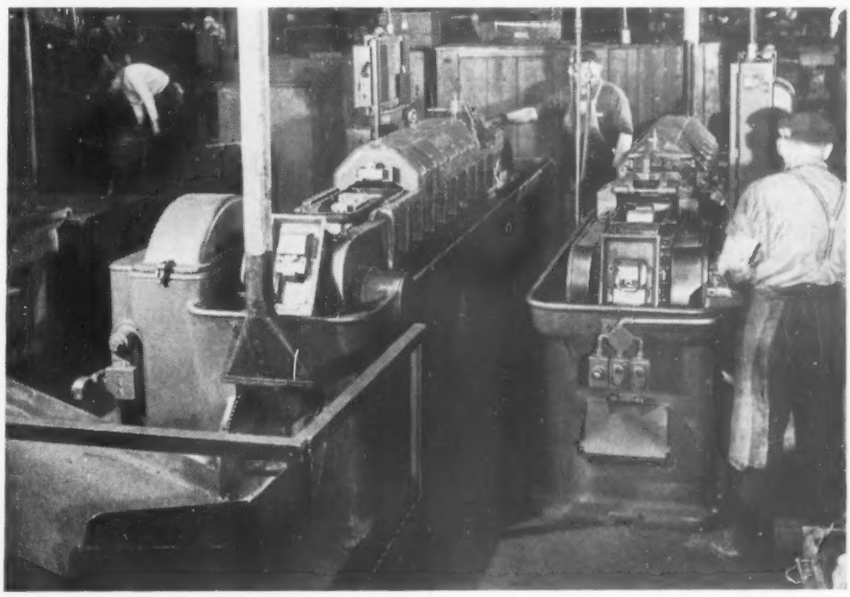
Broaching Plymouth Main Bearing Caps



■ **Continuous lines of Plymouth main bearing caps are drawn through these 20-horsepower twin broaching machines. The caps move through broaching "tunnels" in which the two sides are finished ready for engine assembly. Automatic fixtures lock the caps in place as they pass by the broaching tools, and then release them so that they fall onto a conveyor belt**

ings supplied to Briggs early this year for use on the redesigned Plymouth, which never matured, apparently are destined for the discard since such moldings are not incorporated in the new Plymouth styling.

As another angle on the stainless picture, it is reported Chrysler is doing some work on stamped stainless steel radiator grilles for possible use on two of the company's lines next year.

■ INITIAL steel requirements for Buick's new model call for shipment by Aug. 1, with releases on some items issued on the basis of 13,000 cars. Under present gearing of Buick's assembly line, this would be a month's supply, not an overly large tonnage but nevertheless an encouraging indication of improved automotive steel purchasing.

Buick probably will continue assemblies the balance of this month and begin a quick changeover about the first of August. The fact that Buick's retail deliveries have been holding well, for June totaling 13,446 units compared with 13,841 in May, probably will mean only a brief shutdown at Flint, lending credence to the reports a press preview of new models may be scheduled as early as Aug. 15. The Buick plant has been operating steadily at five days per week.

Closing for Inventory

Chrysler plants will be closed the first week in August for inventory, according to a statement by K. T. Keller, president, but the retooling program now under way will be continued through this period. Mr. Keller stated that during the changeover period more than 15,000 would be at work. Peak Chrysler employment last year was about 55,000.

Engineering conferences are being held by car builders almost daily with sales and advertising agency representatives in attendance to prepare for the coming fall sales drive. Each detail of a new model is described carefully by engineering executives, and samples of the new car are available for minute inspection by the sales forces.

Agency representatives who have made field trips among dealers in recent weeks are coming back highly enthused over prospects for fall sales. They say sentiment among dealers has improved noticeably, with used cars moving at a fair rate and stocks of new cars whittled down well. The economic weeding out of weaker dealers also has helped to improve the outlook of those remaining in business.

Much of this confidence has been engendered by the rising stock market, though many investors here are inclined to be chary of the enthusiasm rampant throughout financial circles.

This appears to be a summer of questions. One query which seekers of the light are continually propounding deals with the effects of the steel price cut on steel company balance sheets. The records show that the steel industry averaged 72.8 per cent of capacity for 1937 and showed a profit of $3.84 per ton of ingot capacity. This year operations have dropped to about 33 per cent, and now $5-$6 has been knocked off the price of a ton of steel. The obvious deduction is that steel producers could not stay out of the red even with operations up to last year's level.

And so the interrogators go a step further and wonder how a 10 per cent wage reduction might affect balance sheets, and where this readjustment would place the breaking point in operations between profit and loss.

It is not idle curiosity which prompts these questions. The steel industry is looked to as a leader and its actions on wages are being waited upon by hundreds of other industries, large and small, including the automotive industry.

The unfortunate part of the matter is that a wage reduction would only postpone the purchase of such commodities as automobiles by workingmen, whose absence from the automobile retail market is largely responsible for the 55 per cent decline in assemblies this year compared with last.

Automobile Production

Passenger Cars and Trucks—United States and Canada

By Department of Commerce

	1936	1937	1938
Jan.	377,244	399,186	227,744
Feb.	300,810	383,900	202,872
March	438,943	519,022	238,753
April	527,625	553,231	238,133
May	480,518	540,377	210,183
5 mos.	2,125,140	2,395,716	1,116,663
June	469,368	521,153	*175,000
July	451,206	456,909	.....
Aug.	275,934	405,072	.....
Sept.	139,820	175,630	.....
Oct.	230,049	337,979	.....
Nov.	405,799	376,629	.....
Dec.	518,958	346,886	.....
Year	4,616,274	5,015,974	.....

*Estimated.

Week ended	
June 18	41,790
June 25	40,918
July 2	40,945
July	25,375

(Production figures for the week ended July 16 will be found on page 35.)

■ CONTRACTS are in process of being let for interior facilities and equipment in the new Ford tool and die shop and mammoth press plant. Among various items are a large number of cubicles or column boxes to house electrical conduits and outlets. All wiring will be in floor tunnels and leads will be brought up into these circular boxes erected around each column in the buildings.

The so-called "first leg" of the press shop calls for 171,000 pounds of steel for these terminals, comprising structural angles and 10-gage sheet covering. Similar stations in the tool and die shop will require an estimated 200,000 pounds of steel. Additional "legs," possibly five or six, in the press shop will be awarded as the work progresses.

Working on Rear Mounting

Granting of another patent to Ford on a rear-engine mounting method which overcomes the disadvantages of slight misalignment is termed only a routine development by Ford officials, but it suggests Ford definitely is working in the direction of mounting his V-8 engine in the rear, and from certain other developments which have come to the surface lately, it may be that the day of this design is not so far off as some had supposed.

An interesting type of drive had been worked out for the small Ford model which is claimed to have been dropped for the time being. It involved a dual driveshaft, one shaft going directly to each of the rear wheels from the transmission, thus providing a triangular stiffening member with the rear axle. Of course, special types of gearing were worked out at the rear wheels, and a special coupling at the transmission.

PLAN WORLD AUTOMOTIVE CONGRESS FOR NEXT YEAR

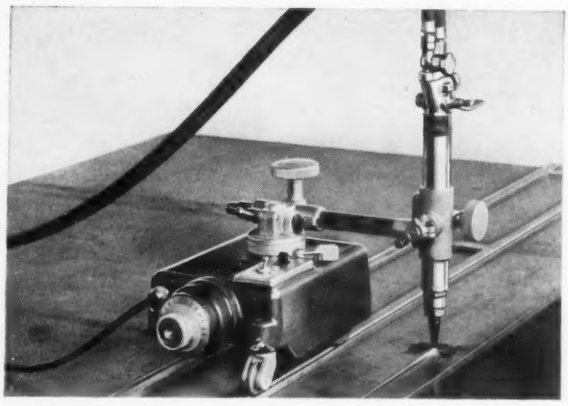
A World Automotive Engineering congress, expected to attract engineers, manufacturing executives and transportation experts from every large country, is being organized by Society of Automotive Engineers for May 22-June 8, 1939. Tentative plans include five days of technical sessions and a banquet in New York soon after the World's Fair opens. Sessions will report world-wide engineering advances in design, manufacture, and operation of automobiles, aircraft, trucks, buses and railcars, and fuel and lubrication refining.

Following the New York sessions, delegates will attend the annual 500-mile automobile race at the Indianapolis motor speedway, May 30, and spend the three following days inspecting principal automotive plants in Detroit.

The New AIRCO-DB No. 10 RADIAGRAPH

The No. 10 RADIAGRAPH with radius rod and center point (standard equipment) cutting an arc with beveled edge. Note the clean face and sharp edges (unretouched) of the cut.

A great little gas cutting machine that most shops need—and can afford to buy!



The No. 10 RADIAGRAPH cutting a straight line with square edge. One section of track for cuts up to 5 ft. long is standard equipment. Using an additional length of track, uninterrupted cuts of unlimited length can be made.

PRICE COMPLETE
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F.O.B. ANY AIRCO DISTRICT OFFICE IN U. S. A.
Price includes the machine proper, torch adjusting unit, standard AIRCO-DB Machine Cutting Torch, Radius Rod and Center Point and one length of Track.

Every shop that cuts steel sheets, plates and forgings for welded fabrication, or bevels them for gas or electric welding, needs this truly portable, motor-driven machine, because it speeds up and cuts the cost of these operations . . . and its very reasonable price puts it within the means of practically any shop.

HERE'S WHAT THE No. 10 RADIAGRAPH WILL DO

1. Cut straight lines of any length, with either square or beveled edges. *(No extra attachment required for bevel cutting.)*
2. Cut circles ranging from 3″ to 85″ in diameter, with either square or beveled edges.
3. Cut arcs up to 42½″ radius, with either square or beveled edges.
4. Cut irregular outlines to a limited degree by manual operation of the torch adjusting arm.

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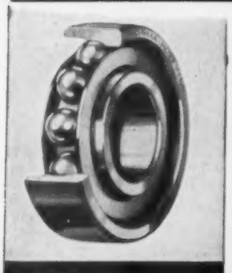
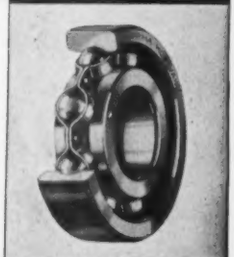
PRECISION BEARINGS



Separable (Magneto) Ball Bearing



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FOR EVERY LOAD, SPEED AND DUTY

108 DISTINCT SERIES

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OVER 3000 SIZES

1/8" to 21" Bore—Metric and Inch Sizes

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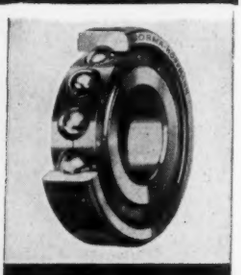
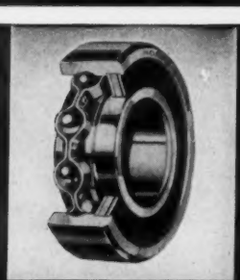


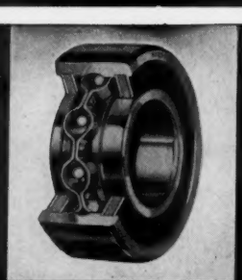
Litro ("CL") Composition Retainer Ball Bearing

Double Row Self-Aligning Ball Bearing

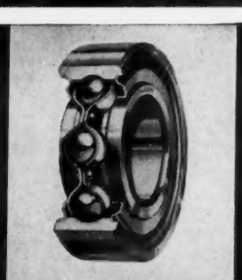
Shielded Type Single Row Ball Bearing



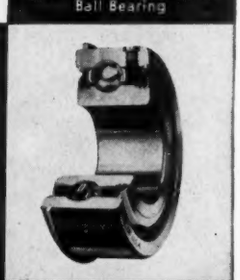
Single Felt Seal Ball Bearing



Double Felt Seal Ball Bearing



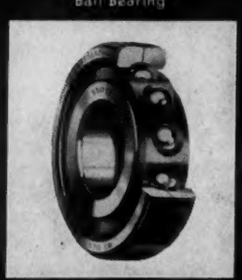
9000 Series (Feltless) Sealed Ball Bearing



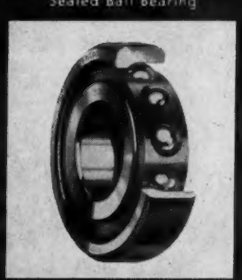
"Cartridge" Fully Sealed, Refillable Type Ball Bearing

Double Row Ball Bearing

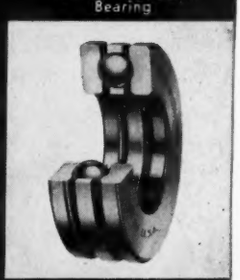
Extra Light Type Ball Bearing



Duplex Type (Two Direction) Angular Contact Ball Bearing



Angular Contact Ball Bearing



Single Direction Ball Thrust Bearing

Standard Cylindrical Roller Bearing

Double Row Self-Aligning Adapter Ball Bearing

Full Type (Retainerless) Cylindrical Roller Bearing

Extra Light Cylindrical Roller Bearing

Two-Lipped Cylindrical Roller Bearing

WINDOWS OF WASHINGTON

WASHINGTON

■ PUBLIC contracts board of the department of labor has invited representatives of ten leading steel companies and Philip Murray of the CIO to act as an advisory panel for a preliminary conference to be held here July 20 to discuss informally setting of minimum wages in the steel industry.

This board, it will be recalled, is charged with execution of the Walsh-Healey law, and is empowered to set minimum wages in industries dealing with the government. A formal hearing will be held July 25. The informal conference July 20 will be an executive session, but the formal hearing is open to the public.

Invitations were sent to the following to act as an advisory panel at the preliminary meeting: Benjamin F. Fairless, president, United States Steel Corp.; J. Edgar Lewis, chairman and president, Jones & Laughlin Steel Corp.; Henry R. Roemer, president, Pittsburgh Steel Co.; Henry Scott, vice-president, Wheeling Steel Corp.; Eugene G. Grace, president, Bethlehem Steel Co.; Dennis P. Weir, chairman of board, National Steel Corp.; Tom M. Girdler, chairman, Republic Steel Corp. and president, American Iron and Steel institute; Frank Purnell, president, Youngstown Sheet & Tube Co.; P. D. Block, president, Inland Steel Co.; and Raoul Desvernine, president, Crucible Steel Co. of America.

Freeze High Steel Wage?

There is considerable discussion about this action of the contracts board and some Washington observers see in the calling of the conferences an effort on the part of the administration to freeze present labor wages in the steel industry. They see considerable reason for this in view of the fact that the government within the next few months

BY L. M. LAMM

Washington Editor, STEEL

will spend a large sum in purchasing steel for various public works.

Up to this time the contracts board has taken up various divisions of the textile industry, shoes and glass, but in no case have the common labor wages been anywhere near as high as in the steel industry. It was because of the high rates paid generally in the steel industry that close observers are of the opinion the contracts board would not take up wages in the steel industry. It is fully expected the board will not make any effort to increase present wages, which means that if anyone is affected, it will probably be only the smaller mills. This is one of the reasons given for the idea that efforts will be made to freeze present wages.

Miss Perkins Has Decision

It will be recalled that under the Walsh-Healey act, following hearings and investigations, the contracts board makes a wage recommendation to the secretary of labor. It is not obligatory for the secretary to agree with the recommendations, but, if they are agreed to, a ruling is made and publicly announced.

L. Metcalfe Walling, administrator of the public contracts division of the department of labor, has sent out the following invitation to attend the informal conference:

"It is the responsibility of the department of labor under the Walsh-Healey public contracts act to determine the prevailing minimum wages which must be paid by employers having contracts with the federal government in excess of $10,000 and inasmuch as the determination must be made on the basis of the prevailing minimum wages of the industry, it is of the first importance that we have the facts as to the present wage structure of the industry.

"I have set the matter down for hearing before the public contracts board of this division on Monday, July 25 at 10 o'clock, E. S. T., in the department of labor building, Washington.

"It has been our custom in making minimum wage determinations, which so vitally affect both industry and labor, to have an advisory panel of labor and management meet informally to discuss certain preliminary matters before the public hearing takes place, and I am therefore extending an invitation to you or a representative whom you may care to designate, in the event that it is impossible for you to attend personally, to take part in such an informal meeting in my office, Room 1333, department of labor building, Fourteenth and Constitution Avenue, Washington, at 10 o'clock E. S. T. Wednesday, July 20.

"In the event that it is impossible for you to attend or to send a representative, I should appreciate your advising me so that I may select another member for the panel in your place. I hope very much, however, that it will be possible for you to attend and give me the benefit of your suggestions, and I am enclosing for your general information a copy of the Walsh-Healey Public Contracts Act."

MONOPOLY PROBERS DENY THEY SEEK SCAPEGOAT

The national economic committee charged with making recommendation to congress on monopoly questions has gone ahead with its organization work with unusual speed.

Washington observers are much interested in the fact that last week two members of the committee, Senator O'Mahoney, chairman, and As-

sistant Secretary of Commerce Patterson, made speeches in which they pointed out with some emphasis that the committee is not on a fishing expedition.

"I cannot state too emphatically that the committee is not looking for victims. It is seeking a remedy for an acknowledged economic disease," Senator O'Mahoney said. "We are not interested in punishing anybody; we are interested only in getting this national economic machine to work in such a manner as, in the words of President Roosevelt's message, 'to preserve private enterprise for profit by keeping it free enough to be able to utilize all our resources of capital and labor at a profit.'"

The senator said also that "the purpose of the study is neither punitive nor political. It is an effort to meet an acknowledged need for the establishment of a clear, stable and practical relationship between government and business, a relationship that will stimulate free, private enterprise and preserve the democratic institutions bequeathed to us by the fathers."

Seek Industrial Picture

Secretary Patterson, while admitting that he had no authority to speak for the economic committee as a whole, said: "I am confident that its members are sincerely intent upon conducting their studies along broad, constructive lines." Referring to the studies of the committee, he said further: "It will not be a witch-burning expedition. We are not looking for scapegoats. The investigation is to be made in order to obtain a complete, accurate picture of those industries in which competition is really effective."

Assistant Attorney General Arnold, in charge of the antitrust division of the department of justice and a member of the committee, indicated that patents and patent pools would be a major subject for study.

Congressional members of the committee were last week assigned to specific units, making up a subcommittee, as follows: Senator Borah to the department of justice; Senator King to the federal trade commission; Senator O'Mahoney to the SEC; Representative Sumners to the treasury department; Representative Reece to the department of commerce and Representative Eicher to the department of labor.

Wendell Berge has been appointed an alternate member for the department of justice and John Abt, of the legal staff of the department of justice, has been appointed the department's chief assistant in the work of the committee.

Arthur R. Himbert, of the University of Wyoming law school, has been appointed an assistant to Senator O'Mahoney, the committee chairman. Also Daniel Bertrand has been named administrative assistant to the executive secretary of the committee and William Leary has been appointed to the committee staff.

An executive committee has been appointed to direct the investigation when a quorum of the full committee is away from Washington, including: Senator O'Mahoney, chairman; Representative Sumners; Assistant Attorney General Arnold; Assistant Secretary of Commerce Patterson; and Isador Lubin, chief of the bureau of statistics.

NELSON, FORMER NRA AID, OFFERED WAGE-HOUR POST

President Roosevelt, up to the time this is written, has not announced an administrator for the new hours and wages division of the department of labor.

The name of Don M. Nelson, Chicago, vice-president of Sears Roebuck & Co., formerly active in the NRA, has been prominently mentioned. In fact, the White House has announced that Nelson has been offered the job.

There are many rumors here as to why he has not yet accepted. One of these is to the effect that Mr. Nelson stipulated that he would take the job only if he could act independently of Miss Perkins. Of course it is beyond the power of the President to grant a request of this kind because under the new law an hours and wages division is created under the secretary of labor.

The far more likely reason is that Mr. Nelson is a high salaried executive and he could accept this job only on a temporary basis. It is understood that the President wants a permanent appointee.

Washington observers who have come in contact with Mr. Nelson are of the opinion that the matter might be adjusted by having him come to the capital for a few months to get the new division properly set up and in working order.

He first came to Washington in July, 1934, and was on the industrial advisory board of the NRA, later being made special assistant to S. Clay Williams, then chairman of the NRA administrative board.

There has been renewed interest in the application of the Walsh-Healey act because of the possibility that something like the same procedure may be followed in selection of industries for application of special wage rates under the new wage-hour law. Of course, there are many differences between the two statutes, and it is entirely conceivable that the new administrator of the wage-hour act will ignore the industry groupings, which have been arrived at under the Walsh-Healey law. Unlike the wage-law, the Walsh-Healey act fixes no absolute top or bottom limits on the minimum wage rates that may be prescribed for industries supplying goods to the federal government.

COAL PRODUCERS OPPOSE NATURAL GAS LINE LOAN

Jesse Jones, chairman of RFC and Percy Tetlow, chairman of the national bituminous coal commission, both received telegrams last week from Appalachian Coals Inc. protesting against a $20,000,000 loan by RFC to finance a natural gas pipe line from Kansas to Minnesota.

Appalachian Coals represents a majority of the producing companies for the high volatile districts of Kentucky, Tennessee, Virginia and West Virginia. R. E. Howe, president of Appalachian Coals, in his wire to the government bodies said:

"We have been informed that an application has been or will be made to the RFC for a $20,000,000 loan to finance a natural gas pipe line from Kansas to Minnesota. The mines for which we sell coal ship about 5,000,000 tons of coal annually to the upper lake docks. This tonnage furnishes a livelihood to about 10,000 people while natural gas is practically a laborless industry. We wish to enter a vigorous protest against this loan."

REOPEN STRIKE HEARING

Senator LaFollette, Wisconsin, who heads the senate civil liberties committee, will begin hearings July 18 in connection with alleged activities during the steel strike of 1937.

Tom M. Girdler, chairman of the board of the Republic Steel Corp., Cleveland, is expected to be one of the more than 100 witnesses to be called by the committee, according to Robert Wohlforth, committee secretary. The LaFollette committee still has 18 investigators in the field and Wohlforth has stated that they will draw a complete picture of the steel strike. It will be recalled that the strike affected plants of four companies in several states, principally in Ohio.

RFC AIDS METALWORKERS

Reconstruction finance corporation made a number of industrial loans during May. Included were: $25,000 to the Buhr Machine Tool Co., Ann Arbor, Mich.; $2000 to Uhler Cine Machine Co., Detroit; $350,000 to the Wilson Foundry & Machine Co., Pontiac, Mich.; $150,000 to the Paxton & Vierling Iron Works, Omaha, Nebr.; $150,000 to the Struthers Iron & Steel Co., Struthers, O.; $10,000 to the City Iron Works, Portland, Oreg.; and $20,000 to the Spring City Foundry Co., Spring City, Pa.

Excess Capacity Is Burden to Steel

■ HOW much of a burden to the steel industry is the cost of carrying excess capacity?

Production of steel ingots during the past 12 years was as follows, in percentage of capacity:

1926	84.05	1932	19.75
1927	75.83	1933	33.95
1928	85.05	1934	36.89
1929	89.05	1935	48.54
1930	63.09	1936	68.36
1931	37.69	1937	72.38

Average rate over 1926-1937, inclusive, based on these figures, was 59.55 per cent of capacity.

Total earnings during these years, in per cent on capitalization, were:

1926	6.70	1932	2.85X
1927	5.22	1933	0.90X
1928	6.55	1934	0.36
1929	9.26	1935	2.09
1930	4.54	1936	4.40
1931	0.40	1937	6.10

X Denotes losses

Average total earnings over 1926-1937, inclusive, based on these yearly figures, were 3.49 per cent.

Industry's Profits Are Earned By 60 Per Cent of Capacity

That is about 60 per cent of ingot capacity, after absorbing depreciation and overhead applying to the idle 40 per cent, earned 3.49 per cent on the capital invested in all the capacity.

This 60-40 ratio is not entirely representative, owing to the severe effect of the depression years in reducing production. Nevertheless it suggests certain conclusions.

One is that the steel industry, always plagued with obsolescence, is slower than it might be in charging off depreciation.

Another is that steel, instead of being a $4,281,264,890 industry, actually would be capitalized at considerably less if much excess capacity whose future usefulness is problematical, were scrapped.

Recent elimination of the Pittsburgh-plus pricing system lends special significance at this time to the question of excess steelmaking capacity.

Idle Capacity Is Increasingly A Problem as Conditions Alter

Destruction of this system has caused many mills to lose former advantages due to geographical locations.

Trends in relocation of producing and consuming plants may be expected to reflect some definition as time goes on and the implications of the new price system more fully revealed.

Improved demand for steel may prove an important factor in temporarily alleviating the burdensome effects of excess capacity. In fact, it might be expected that the low level of steelmaking operations since 1930 should be counterbalanced by larger production over the years to come.

In its approach on the ever-present problem of excess capacity, however, the steel industry will do well to follow a realistic policy based on present conditions. In so doing, it will proceed most effectively in adjusting itself to the future.

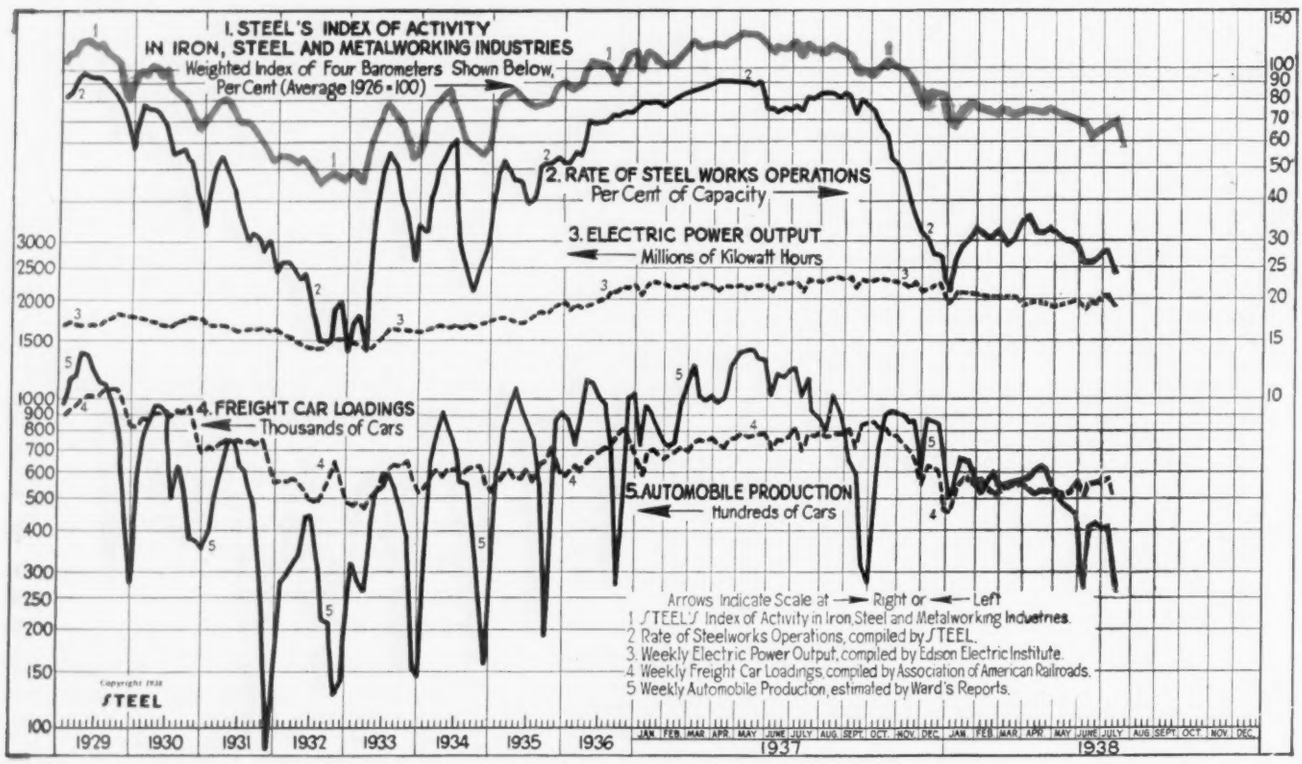
Activity Index Reflects Holiday Interruption

■ RECORDS of business for the week ended July 11 are distorted somewhat by the interruption of activity occasioned by the observance of the Fourth of July holiday. Due partly to this factor and to the prolonged holiday shut-down at certain automotive assembly lines, STEEL'S index of activity declined from 66.5 per cent to 57.3. In order to match this latter figure, it is necessary to go back to Dec. 8, 1934, when the index stood at 56.8.

The rather sharp drop in STEEL'S index for the holiday week reflects substantial losses in all four barometers from which the index is composed. The rate of steelmaking operations declined 4 points to 24 per cent. This represents a new low since the week ended Jan. 1. However, a substantial rebound in this important business indicator is anticipated in the immediate future. After reaching a peak for this year of 588,864 cars in the week ended July 2, revenue freight carloadings declined to approximately 513,489 cars during the holiday week.

Electric power consumption fell below the 2,000,000,000 kilowatt-hour level in the week ended July 11. At this time a year ago power output was placed at 2,096,246,000 kilowatt-hours. Reflecting almost a full week shut-down at some assembly lines and sharp curtailment at others, automobile production declined to the lowest level for any full week since Oct. 3, 1936. A moderate reaction to approximately the pre-holiday levels is expected for the week ended July 18, but present production estimates over the next 30 days does not offer much encouragement.

Obviously the rebound from holiday lows will be watched with more than usual interests for signs of recovery. Developments in the next few weeks should indicate whether or not business is prepared to go through with the expected early fall rally.


1. STEEL'S INDEX OF ACTIVITY IN IRON, STEEL AND METALWORKING INDUSTRIES
Weighted Index of Four Barometers Shown Below, Per Cent (Average 1926 • 100)
2. RATE OF STEEL WORKS OPERATIONS
Per Cent of Capacity
3. ELECTRIC POWER OUTPUT
Millions of Kilowatt Hours
4. FREIGHT CAR LOADINGS
Thousands of Cars
5. AUTOMOBILE PRODUCTION
Hundreds of Cars
Arrows Indicate Scale at → Right or ← Left
1 STEEL'S Index of Activity in Iron, Steel and Metalworking Industries.
2 Rate of Steelworks Operations, compiled by STEEL.
3 Weekly Electric Power Output, compiled by Edison Electric Institute.
4 Weekly Freight Car Loadings, compiled by Association of American Railroads.
5 Weekly Automobile Production, estimated by Ward's Reports.
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1929 1930 1931 1932 1933 1934 1935 1936
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC. 1937
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC. 1938

STEEL'S index of activity declined 9.2 points to 57.3 per cent in the week ended July 9:

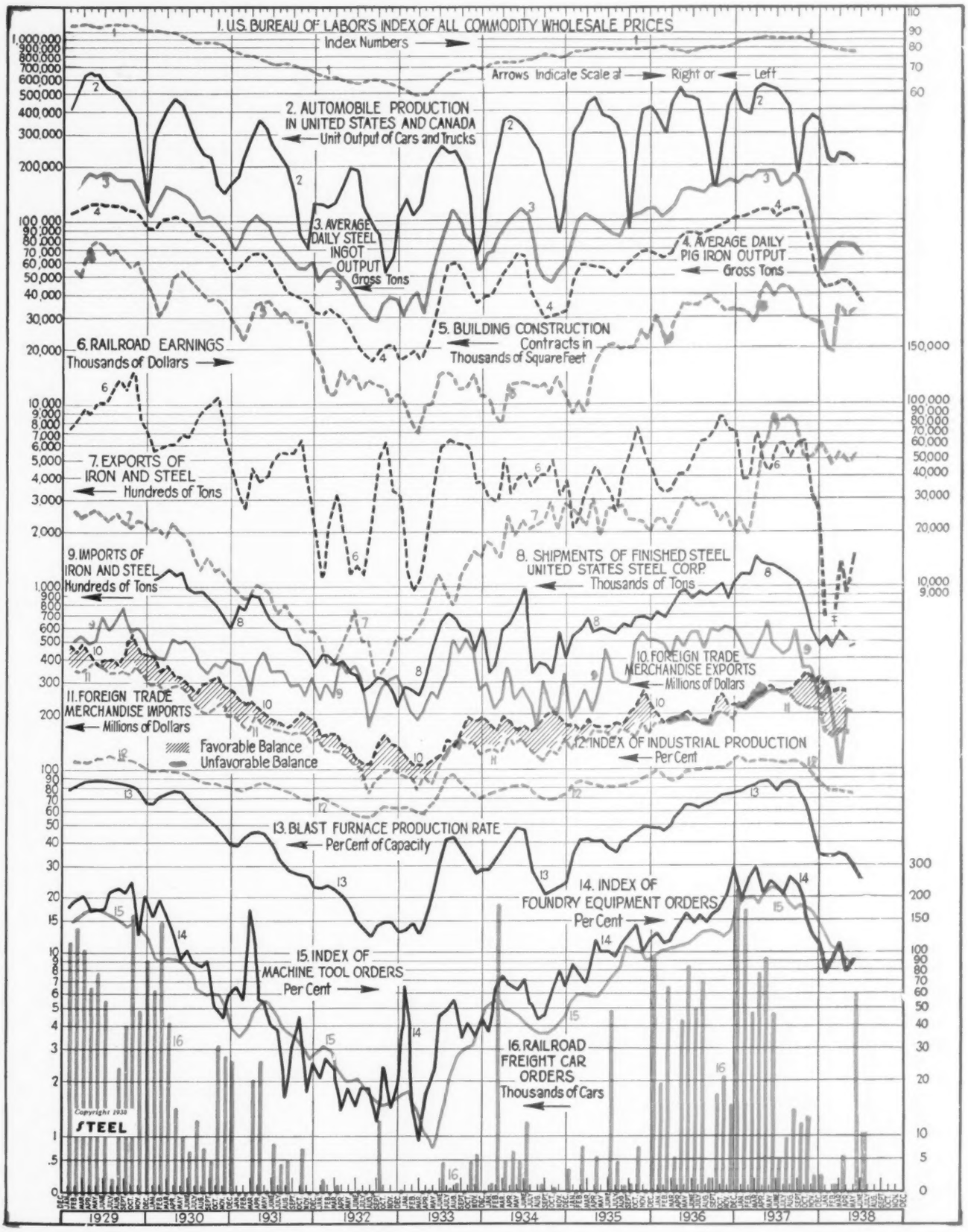
Week ending	STEEL'S Index of Activity Index No. 1938	1937	Steelworks Operating Rate Per Cent 1938	1937	Electric Power Output Million KWH 1938	1937	Freight Car Loadings 1938	1937	Weekly Auto Output 1938	1937
Apr. 9	71.3	112.8	32.0	91.5	1,990	2,176	521,978	716,044	60,975	99,196
Apr. 16	71.4	119.6	32.0	91.5	1,957	2,173	537,595	751,328	62,021	125,472
Apr. 23	70.8	122.0	32.5	91.5	1,951	2,188	523,767	761,182	60,563	133,164
Apr. 30	68.4	123.9	32.0	91.0	1,938	2,193	543,075	782,423	50,755	139,475
May 7	68.5	123.5	31.0	91.0	1,939	2,176	536,140	767,481	53,385	140,188
May 14	67.2	123.2	30.0	89.0	1,967	2,194	541,813	773,669	47,415	140,396
May 21	67.1	122.2	30.0	91.5	1,967	2,198	545,808	779,276	46,810	131,306
May 28	66.5	115.6	28.5	75.0	1,973	2,206	562,061	794,855	45,120	131,421
June 4	58.1	105.1	25.5	75.0	1,878	2,131	502,624	692,140	26,980	101,629
June 11	64.4	111.4	25.5	74.0	1,991	2,214	553,854	754,360	40,175	118,798
June 18	65.2	110.3	27.0	75.5	1,991	2,213	555,569	756,289	41,790	111,620
June 25	66.0	112.8	28.0	74.0	2,019	2,238	558,937	773,733	40,918	121,032
July 2	66.5†	115.3	28.0	77.5	2,014	2,238	588,864†	806,168	40,945	122,890
July 9	57.3*	103.8	24.0	74.0	1,881	2,096	513,500*	682,205	25,375	100,981

*Preliminary. †Revised.

TREND

Key:	May, 1938	Key:	May, 1938	Key:	May, 1938	Key:	May, 1938
1	78.0	5	34,760,000	9	20,814	13	25.4†
2	210,183	6	‡16,496,701	10	274,482,000*	14	90.6
3	63,010†	7	540,639	11	158,907,000*	15	88.0
4	35,186†	8	478,057†	12	76.0	16	1178†

*April. †June. ‡Deficit of $2,136,481 in February not shown on chart.



Key: 1. U. S. Bureau of Labor's Index of all Commodity Wholesale Prices. 2. Automobile Production in United States and Canada, compiled by U. S. Department of Commerce. 3. Average Daily Steel Ingot Output, compiled by American Iron and Steel Institute. 4. Average Daily Pig Iron Output, compiled by STEEL. 5. Building Construction, Contract Awards in 37 States, compiled by F. W. Dodge Corp. 6. Railroad Earnings, Net Operating Income for Class I Roads, compiled by Bureau of Railroad Economics. 7 and 9. Iron and Steel Foreign Trade, reported by Bureau of Foreign and Domestic Commerce. 8. Shipments of Finished Steel, United States Steel Corp. 10 and 11. Foreign Trade, Value of Exports and Imports, reported by Bureau of Foreign and Domestic Commerce. 12. Index of Industrial Production (adjusted for seasonal variation; average 1923-25=100) computed by Federal Reserve Board. 13. Blast Furnace Production Rate, compiled by STEEL. 14. Index of Foundry Equipment Orders (Average 1922-24=100), compiled by American Foundry Equipment association. 15. Index of Machine Tool Orders (Three-month moving average; average monthly shipments 1926=100), compiled by National Machine Tool Builders association. 16. Railroad Freight Car Orders, compiled by STEEL.

New Furnaces

For heating ingots and billets for forging hammers, new units use gas with complete control of temperature and atmosphere and with a flame of definite characteristics. Scale loss has been reduced from 6 down to 2.1 per cent of the material used

■ TO MEET increased demand for product quality, Columbia Tool Steel Co., Chicago Heights, Ill., has completed the installation of three additional entirely new gas-designed ingot and billet heating furnaces. Decision to take this step, according to Arthur T. Clarage, president, arose from the improved results which the company experienced after converting its old furnaces to gas a year ago (see STEEL of Feb. 3, 1936, page 48). The new furnaces were designed and installed by Mahr Mfg. Co., Minneapolis, supplier of the original conversion equipment.

During the short time they have been in operation, the new furnaces, serving 8000-pound, 3500-pound and 750-pound steam forging hammers, have shown an added improvement in performance, including further reduction in scale and in the control of surface decarburization, resulting in a greater net return per pound of material processed.

In addition, speed of heating plus accuracy of temperature control, which has come to be taken for granted in installations of this type, has further improved the quality of the finished work. The steels which are heated comprise the usual types of tungsten high speed steel, molybdenum high speed steel, tungsten-chromium finishing steels, high carbon-high chromium die steels, non-shrinking die steels and special alloy steels, together with carbon tool steels.

Loss Before Change Made

In 1934, the last year before the application of the new heating method, the company had a total scale loss from ingot to shipping weight after proper credit of scrap recovery, of 6 per cent of the material used. With the new equipment the company reports a loss for 1936 of only 2.1 per cent. Recovery in salable weight expressed similarly increased from 64 per cent to 68 per cent of the material used. It also is pointed out that the recovery was better than the figures would indicate because specifications of both the company and its customers became much more exacting during the period.

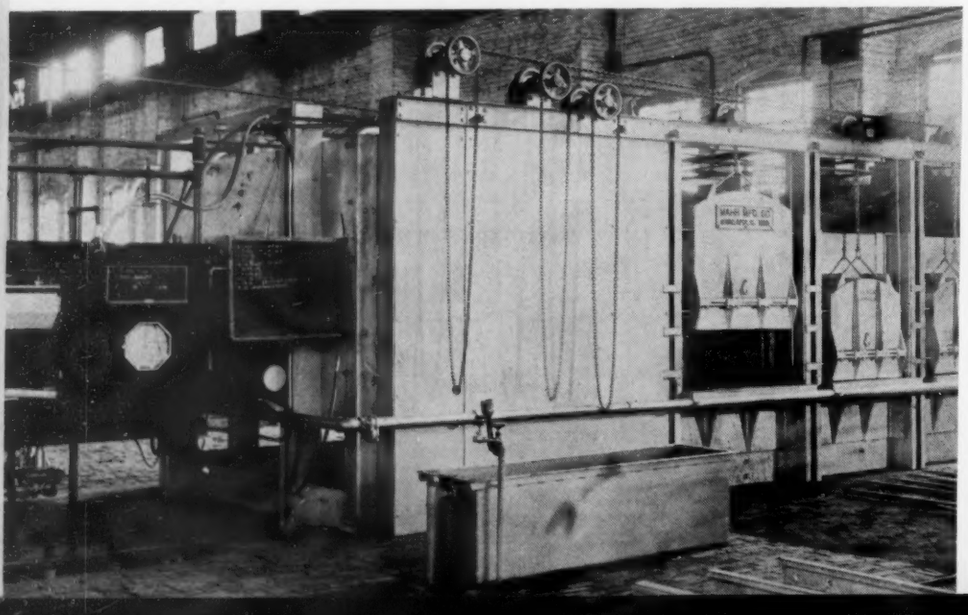
The new furnaces embody improvements in combustion chamber design and in the application of burners and controls. Additional research by Robert G. Guthrie, chief metallurgist for The Peoples Gas Light & Coke Co., Chicago, and his associate, Dr. Oscar J. Wilbor, who designed the original conversion installation, has resulted in improvements in design of the furnace and related equipment.

This improvement in the combustion chamber consists of the establishment of a definite relationship between volume of flue products and chamber size necessary for the complete reaction between air and gas; that is, constant chemical analysis of the products of combustion from the time they enter the furnace until they leave. These furnaces constitute the first installation of their type.

Research for Control

The research was directed chiefly to the problem of complete combustion control, in other words, the achievement of a heating flame of definite characteristics, the products of which have proved to be most desirable for this type of heating. Operation of these new furnaces is said to have resulted in a close approach to perfection in this respect.

Accuracy of combustion control has been made possible by two factors, availability of a supply of nat-



Steel cased and insulated, 4-ton hammer, ingot and billet heating furnace equipped with blower, motor-operated valve, pyrometer, carbon dioxide meter, draft gage and interlocking valve. It delivers steel with a minimum of scale and surface decarburization

ural gas of uniform heating value and the combustion of this gas, at positive pressures, with a uniform and predetermined air supply. This practice results in the entire elimination of variables in the combustion equation.

Furnace atmosphere is controlled, recorded and maintained to 0.5 to 1 per cent free oxygen by a careful setting of the air and gas valves, or a separate mixing device. The air-gas ratio must be determined by computation and checked by gas analysis.

The new furnaces are of the more or less conventional box type, with a special combustion chamber and a special arrangement of burners and vents. They are of the so-called portable type, involving a steel underframe resting on, but not fixed to, a concrete slab which permits expansion and contraction and transmits a minimum of ground shocks to the furnace proper. This construction, which also insures easy portability, is expected to increase furnace life and to reduce repairs to the refractories.

Designed to be Jacked

Although the overall dimensions are as much as 26 feet long and 12 feet deep, the furnaces are designed so that they can be jacked up on rollers and moved to new locations should plant practice make this desirable. Having no stacks, and being connected only to gas and air lines and to control instruments which are easily moved, they are truly portable.

The furnaces have heating chambers up to 7 feet deep and approximately 16 feet long, with the height of door openings arranged to suit the various sizes of work to be heated. They are lined with the new increased alumina super refractory fire brick backed with light weight insulating brick.

In use, the heating program is an exact schedule determined by the job foreman. By means of a program slate the foreman indicates his instructions for the 24-hour shifts. A recording pyrometer shows whether or not these instructions have been followed and, likewise, continuous gas analysis apparatus shows whether or not desired combustion has been maintained.

Further reduction in gas consumption has followed the improvements in furnace and combustion chamber design and from the utilization of insulation. Insulation has also contributed substantially to the comfort of hammer crews working near the furnace.

An air curtain is installed at each door for protection of the operators. This curtain also serves to cool the door and door frame castings. The furnaces operate at a slight positive pressure, which is the result of the measures taken to control atmospheres. A propane standby has been installed, making it possible to change over to substitute fuel at any time without any interruption or furnace adjustments.

Incidental to this furnace practice, but important in the opinion of the management, is the fact that the controlled gas firing makes possible a floored, lighted, comfortable, clean shop that is free from soot, scale and cinders. All furnaces and equipment, such as rolling mills, hammers and shears, are kept in a clean aluminum-painted condition, all of which is conducive to the new standards of workmanship required.

"It is true that modernization often carries added expense for some time after new equipment has been installed due to required attention and duplication," according to Mr. Clarage. "But we have found that when the modernization is done in accordance with the right principles, the plant operator can depend on improvement of product, quality and quantity with a drop in operation and maintenance costs which more than pays for the new equipment. In the manufacture of good tool steel the best equipment and methods are a good investment in every way."

High-Strength Steel Made by Heat Treating

■ NEW HIGH TENSILE steel, known as DYN-EL, recently introduced by Alan Wood Steel Co., Conshohocken, Pa., is intended to permit the use of lighter construction with a reduction in installation cost even without radical redesign. The product has resulted from three years of tests in structures intentionally under-designed and overstressed. Free of alloys, it is low in cost. It has static and dynamic properties and resistance to corrosion necessary for high-stress design. It is produced by a patented quenching and tempering process.

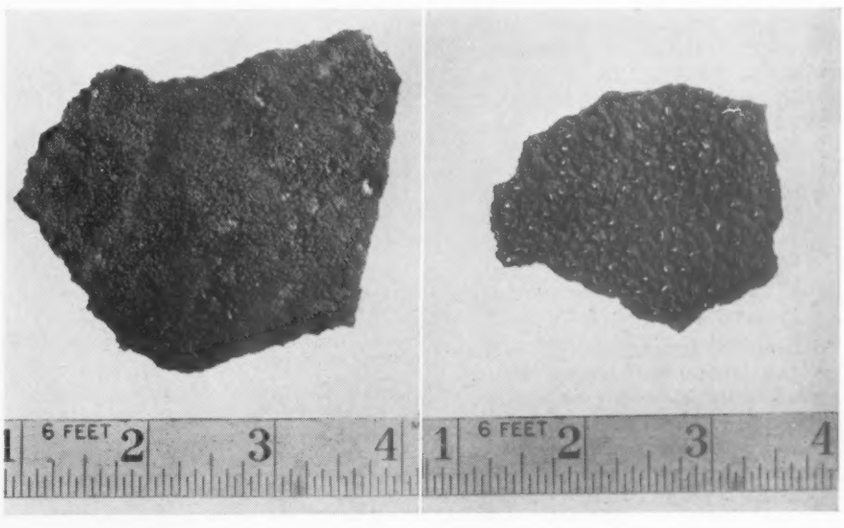
Gives Weight Saving

Calculations worked out by the company indicate that the use of this material for the car body, side sheets and slope sheets in a 70-ton hopper car, without redesign, gives a weight saving of 25 per cent and a cost saving of 3.7 per cent as compared with copper bearing steel. Tests indicate life of 25 to 30 years in these applications. By redesigning, the company states, the savings are 42.7 per cent in weight and 23 per cent in cost. Similar calculations have been made as to the use of this material in freight car roofs, motor trucks and buses.

Safe working loads for design with DYN-EL are said to be 25,000 pounds per square inch. Typical physical properties are 58,000 pounds per square inch elastic limit, 72,000 pounds per square inch tensile strength, 28 per cent elongation in 2 inches and 60 per cent reduction of area. The material has high impact value, particularly at low temperatures. Endurance limit is 45,000 pounds per square inch.

The material can be worked cold or hot, flanged and pressed to fairly short radii or considerable elongation and retains its properties after these operations. It has good welding qualities and is available in the form of sheets and plates.

The new material contains 0.11 to 0.14 per cent carbon, 0.50 to 0.80 per cent manganese, 0.06 to 0.10 phosphorus, 0.04 maximum sulphur and 0.30 to 0.50 copper.



At left is shown a sample of scale while operating on coal; the piece weighs 53 grams. Typical scale since conversion to gas is shown at right; it weighs 6½ grams and thinness is indicated by the light passing through it

Testing Materials Society Revises Standards on Nonferrous Metals

■ ONE SESSION of the forty-first annual meeting of the American Society for Testing Materials in Atlantic City, N. J., June 27-July 1, was devoted to nonferrous metals and alloys. Numerous actions were taken affecting standards. Another session, dealing with coal and coke and gaseous fuels, also was featured with recommendations on new and existing standards. A session on paints included an important paper on the adherence of organic coatings to metals. Reports of these sessions are given herewith; reviews of other parts of the meeting appeared in STEEL for July 4, pages 19 and 38, and July 11, page 37.

A wide variety of subjects were covered in reports of committees and technical papers at the session on nonferrous metals and spectrography, with T. S. Fuller, metallurgist, research laboratory, General Electric Co., Schenectady, N. Y. and T. A. Wright, technical director and secretary, Lucius Pitkin Inc., New York as co-chairmen.

Progress in Spectrography

Committee E-2 on spectrographic analysis and committee E-3 on chemical analysis presented progress reports. Description of equipment and methods used to meet a particular condition for spectral analysis was presented by C. J. Neuhaus, spectrographic laboratory, International Nickel Co. Inc., Huntington, W. Va., in a paper, "An Arc Source for Quantitative Spectral Analysis". The speaker pointed out that while generally the spark method is recognized as more reliable in providing reproducible results, conditions may arise to jeopardize the applicability of that method of excitation.

A paper on compressive impact, and other mechanical properties of nickel and some of the high-strength corrosion-resisting alloys was presented by Charles F. Catlin, research metallurgist and W. A. Mudge, works metallurgist, International Nickel Co. Inc., Huntington, W. Va. This paper presented compression and impact properties for nickel, inconel, and three types of monel metal, with corresponding tension and hardness data.

Report of committee B-2 on nonferrous metals and alloys was presented by E. E. Thum, editor, *Metal Progress*, Cleveland. The committee is preparing a specification for electrolytic copper. Report of committee B-3 on corrosion of nonferrous metals and alloys was presented by T. S. Fuller, chairman, and included information on the activities of several subcommittees. Appendix to the report entitled "Report of Sub-Committee VI on Atmospheric Corrosion of Nonferrous Metals and Alloys" was presented by W. H. Finkeldey, Singmaster & Breyer, New York, and chairman of the subcommittee. The report presented results of a third series of tests made on 24 nonferrous metals and alloys, exposed since 1931 to various atmospheres at nine test locations. The committee contemplates five such tests extending over a period of 25 years.

Report of committee B-5 on copper and copper alloys, cast and wrought was presented by C. H. Greenall, apparatus development department, Bell Telephone Laboratories Inc., New York, and committee chairman. The report, adopted at the meeting, recommends revisions to the following tentative standards: Specifications for wrought phosphor bronze bearings and expansion plates for bridges and structures (B100-35T); specifications for bronze castings for turntables and movable bridges (B22-36T); specifications for copper and copper alloy seamless condenser tubes and ferrule stock (B111-37T).

Revisions Are Recommended

Revisions of the following standards are proposed: Specifications for aluminum bronze castings (B59-36) for immediate adoption; specifications for sheet high brass (B36-33). The following two tentative standards were recommended for adoption as standard: Specifications for bronze castings in rough for locomotive wearing parts (B66-36T); specifications for car and tender journal bearings, lined (B67-36T). The committee suggests withdrawal of standard specifications for yellow brass castings for general purposes (B65-28).

Report of committee B-6 on die-cast metals and alloys, presented by J. R. Townsend, materials standards engineer, Bell Telephone Laboratories Inc., New York, and committee chairman, included recommendations for revisions in the following tentative standards: Specifications for zinc-base alloy die castings (B86-34T); specifications for aluminum-base alloy die castings (B85-37T); specifications for magnesium-base alloy die castings (B94-37T); and specifications for lead and tin-base alloy die castings (B102-35T).

Sam Tour, vice president, Lucius Pitkin Inc., New York, presented the report of committee B-7 on light metals and alloys, cast and wrought. The report includes recommendations for a new tentative standard covering methods of test for dielectric strength of anodized aluminum and revisions of the following tentative standards: Magnesium-base alloys sand castings (B-80-36T); magnesium-base alloy sheets (B90-36T); magnesium-base alloy forgings (B91-36T); magnesium-base alloys bars, rods, shapes (B107-36T); magnesium-base alloy ingot for remelting (B93-36T); aluminum-base alloys in ingot form for permanent mold castings (B112-37T); aluminum-manganese alloy sheet and plate, (B79-36T); aluminum sheet and plate (B25-36T); and aluminum-base alloy permanent mold castings (B108-37T).

Variables Affect Results

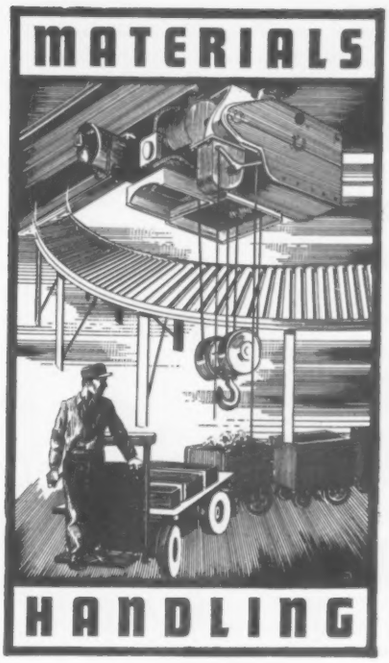
The report included a paper "Effect of Foundry Variables on the Mechanical Properties of Sand-Cast Tension Test Specimens" by H. J. Rowe, metallurgical engineer, Aluminum Co. of America, Cleveland. Mr. Rowe pointed out that while many variables discussed may not in themselves result in a sufficient reduction in the strength of aluminum alloy test specimens to be considered serious, accumulative effect of several insignificant conditions may become appreciable. The speaker warned that it is not correct to assume the effects of all individual factors are numerically additive. However, it is quite possible to reduce the tensile strength of aluminum alloy test specimens as much as 40 per cent by the cumulative effect of the conditions which they considered.

Adherence of organic coatings to metals was the subject of a paper by A. E. Schuh, member of technical staff, Bell Telephone Laboratories Inc., New York. Organic finishes to be serviceable must adhere well to the underlying base material for protracted periods. Finishes vary considerably in this respect and the evidence of poor adherence, such as flaking, peeling, easy removal by some external force, etc., is so glaringly conspicuous as to suggest a readily assignable cause for the phenomenon.

Actually, however, Mr. Schuh asserted, these final evidence of adherence loss are in most cases the net result of a prolonged tug-of-war among a large number of competing forces. Although the final sign of adherence loss may be the same for several different finishes, the cause and road to failure for each may be quite different.

Purpose of Mr. Schuh's paper was to point out and discuss a number of the factors that affect adherence

(*Please turn to Page* 51)



Crawler Tractors

Demonstrate ability to perform routine and special handling and haulage service in industrial plants. Speed up unloading of ore and coal boats

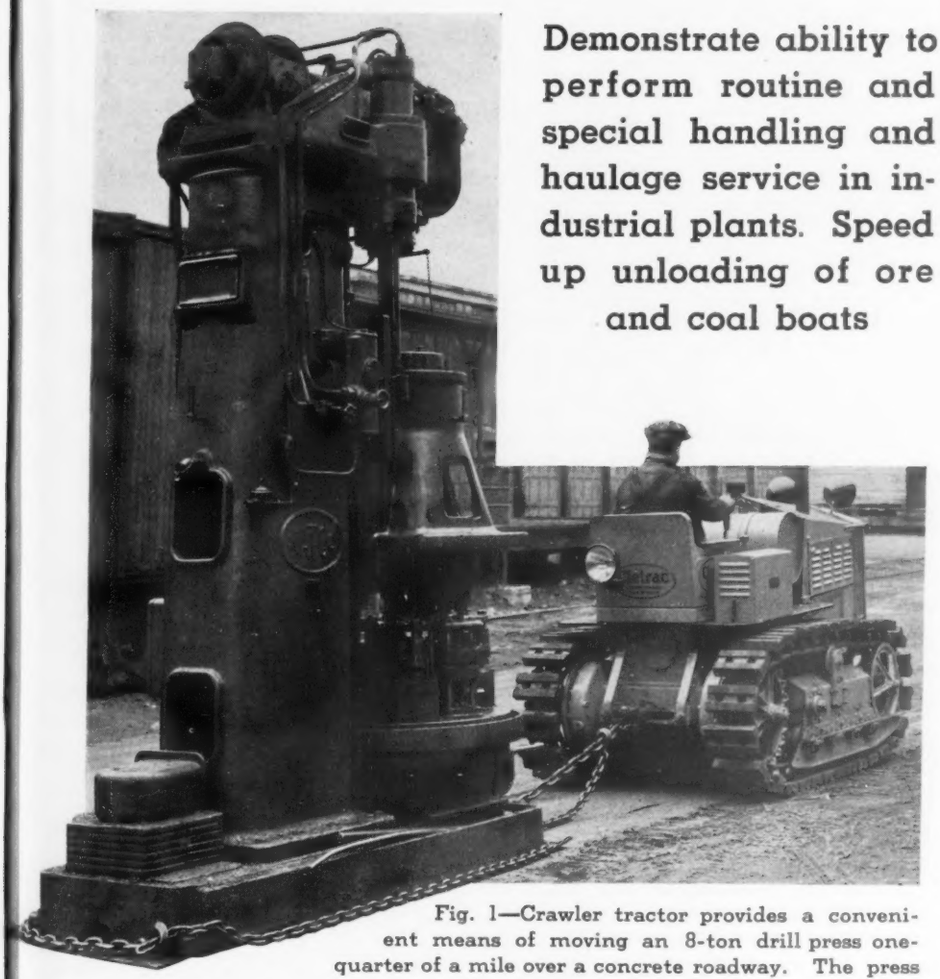


Fig. 1—Crawler tractor provides a convenient means of moving an 8-ton drill press one-quarter of a mile over a concrete roadway. The press base rests on a steel plate

■ CRAWLER or track-laying tractors are commanding increasing attention as industrial materials handling units. Powered with either gasoline or diesel engines, and possessing ruggedness, exceptional traction, heavy drawbar pull and good maneuverability, tractors of this type are well adapted to routine or special handling and hauling service in iron, steel and metal-working plants. Equipped with attachments, such as front end loaders and bulldozers, they facilitate handling of bulk materials and unloading of ore and coal boats.

The Cleveland Tractor Co., Cleveland, manufacturer of the well-known Cletrac crawler tractor, has placed many of its units in the industrial field. Many of these are performing more or less orthodox plant and mill service; a considerable number, however, have been utilized on special jobs somewhat out of the ordinary and have solved difficult handling problems. The purpose of this article is to describe a few of these applications and to demonstrate how proper use of crawler tractors can effect substantial economies in transportation and handling operations.

Moving shop machinery, such as machine tools, is a task which can be performed expeditiously with a track laying or crawler-type tractor. If several machines are to be moved, considerable saving in time can be effected. Instead of placing a machine on rollers and inching it forward by hand, as is customary procedure, the unit is skidded onto a steel plate of suitable size, then the tractor is hooked to the plate and the machine is pulled to its new location.

A light-weight machine, of course, can be moved a short distance by simply looping the tractor chain around the base and easing the unit to a new position. When a number of machines are to be moved and the distance is appreciable, however, it is best to employ the plate method. Sometimes three or more machines can be placed on one plate; if the machines are extremely light, several plates can be hooked together tandem and all moved together in one tractor haul.

Plates Slide Smoothly

The advantage of using steel plates is that the plates will slide smoothly over irregular floor or ground surfaces. Loaded plates ride over high and low spots which would cause rollers to foul. Fig. 1 shows a crawler tractor moving a large multiple drill press over a concrete roadway. This machine weighed 8 tons and was moved a quarter of a mile. After the unit was loaded on the plate, one man and the tractor handled the job.

A machinery manufacturer who exports a number of machines during the course of a year was confronted with the problem of placing boxed machines in freight cars for shipment. Because the boxes are extremely heavy, loading by the hand method requires the services of several men and considerable time. In an effort to speed up and simplify the loading, the management turned to a crawler tractor with gratifying results. One man and the tractor are able to handle the job satisfactorily, releasing the former loading crew for other assignments.

The loading job does not end at

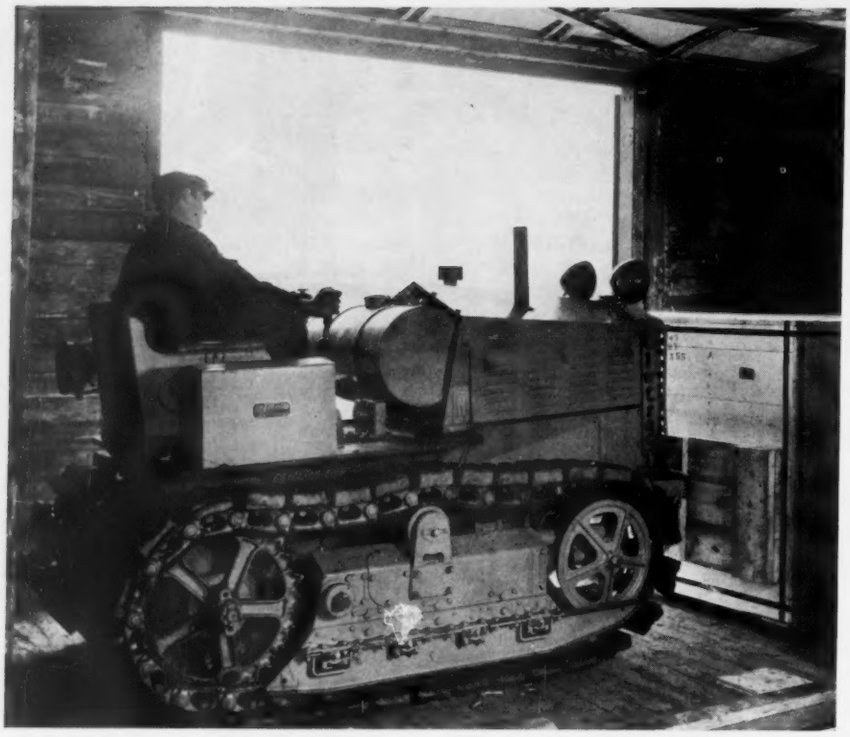


Fig. 2—Not only does the tractor push the boxed machine into the freight car, but it positions it properly in the car

the car door, for when a box is pushed from the shipping platform into the car, the tractor enters the car and skids the box to its proper position. Fig. 2, showing the tractor inside a car, indicates how the loading job is handled. No change in construction is necessary to adapt the boxes to tractor loading. However, two short pieces of wood are nailed on one end, as shown in the illustration, to serve as temporary push plates; these are removed when the box is placed in the car.

The steel plate method of haulage finds use in a number of plants, largely because of its simplicity and because the plates are capable of handling heavy loads. A wide variety of products and materials can be moved about in this manner, and, except for the tractor, no upkeep in handling equipment is entailed. Fig. 3 shows how one automotive plant makes use of a tractor and steel plate to haul partially assembled engines into storage. Handled in this way, engines do not have to be lifted from the floor to be moved; they are simply trucked on and off the plate.

On one occasion, 12 barrels of oil were loaded on a plate 5 x 12 feet to be delivered to the basement of the plant. To reach this location, it was necessary to lower the load on a deadend elevator. Length of the elevator would not permit turning the load on the elevator, and this necessitated backing it on. However, the tractor was able to accomplish this without difficulty. Other handling operations in the plant are performed with plates with similar economy. The plates are over seven years old and still are in good condition.

Crawler-type tractors are finding increasing use in iron, steel and metalworking plants, and perform a variety of haulage and handling operations. Their great flexibility, high power, and positive traction, are important assets in this service. Fig. 5 shows a track-laying tractor moving a truck load of steel tubes in a large tube mill. Here the tractor solved a difficult problem, because oil dripping from the tubes penetrates the floor and maintains it in a slippery condition. The crawler tractor, however, having 1488 square inches of ground contact, overcomes this handicap.

Works in Close Quarters

To manipulate the small trucks loaded with tubes, the tractor runs alongside of the load, hooks its bumper on a truck stanchion, and moves the tubes to the storage area. Here the front end of the load is lined up, then the tractor moves back of the load and pushes it into place. In the illustration, Fig. 5, the tractor is shown pushing a loaded truck from between two other trucks. This demonstrates also that the tractor can be driven through narrow aisles.

In a large wire mill it is necessary to convey wire rods through an underpass under a railroad. The grade on one side is 10 per cent and on the other side 11 per cent. Because of the severity of these

Fig. 3—An automotive plant uses a tractor and steel plate to move engines into and out of storage. Being trucked on and off the plate, the engines do not have to be lifted

Wheels...

THAT CARRY A COUNTRY

★Without steel you would spend your life cooped up in some small community, and a ten-mile journey would be a rare adventure. This country of ours would still be largely wilderness. Comforts we take as a matter of course would be unheard-of luxuries.

It is no coincidence that America consumes more steel per person than any other nation--and has the highest standard of living. *Steel* makes possible our modern life and its multiple comforts.

Companies which create the faster and more accurate machinery, faster and more dependable transportation, stronger and more lasting construction--these are the companies *we* serve. Thousands of these companies depend on Youngstown, because they know that Youngstown is constantly at work in research, to find steels best suited for their needs.

THE YOUNGSTOWN SHEET AND TUBE COMPANY

Manufacturers of Carbon and Alloy Steels

General Offices - - YOUNGSTOWN, OHIO

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25-7A

QUALITY YOUNGSTOWN SERVICE

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grades, and because it is economical to move the rods only in sizable loads, a crawler-type tractor handles the haulage. Four balance-type trucks are loaded with 2 tons of rods each, making a total of 8 tons, and these are coupled to the tractor.

When the train descends the incline, it is necessary to place steel bars through the wheels of the two rear trucks to serve as brakes and to keep the trucks from running up on the tractor. The rods are not removed when the train ascends the second incline so that the same braking power is effective on the pull-up. In spite of this, the tractor has no difficulty in moving the load.

Furnaces Are Charged

A crawler tractor has been used for various handling operations in one of the large commercial heat treating plants for the past 20 years. Physical limitations of the plant building are such that an overhead handling system cannot be employed. Work to be treated in the furnaces, however, is of such size and weight that some adequate mechanical means of handling is imperative. In this assignment, the tractor functions effectively and efficiently.

Heavy steel bars up to 7 inches diameter, 22 feet length, and 2 tons in weight, constitute one of the products which are heat treated in considerable volume. These bars are stored temporarily in the yard adjacent to the plant and as needed are pulled into the plant by the tractor and deposited close to the furnace in which they are to be heated. In the charging operation, one end of a bar is raised from the floor by a hoist and started in the furnace door. The hoist is then moved back to the other end of the bar and lifts it to be level of the furnace hearth. This accomplished, the tractor moves up back of the bar and pushes it into the furnace. This operation is shown in Fig. 4.

The furnace is of the through-type with the quench tank located at the discharge end. At the conclusion of the heating cycle, the bars are pushed from the furnace into the quench by the tractor, using a push bar between the ends of the heated bars and the tractor. In addition to the work just described, the tractor performs miscellaneous handling and hauling about the plant as required.

Fig. 4—In a commercial heat treating plant, heavy bars are brought to and charged into the furnace with a crawler tractor. After the heating cycle, they are pushed through the furnace into the quench in the same manner

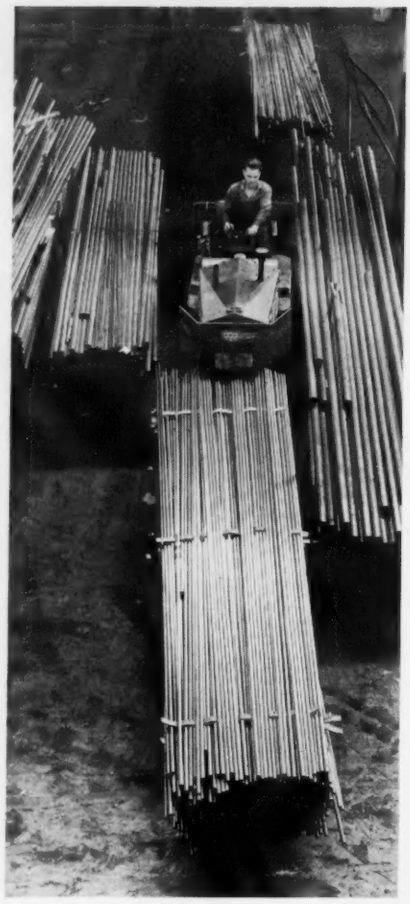


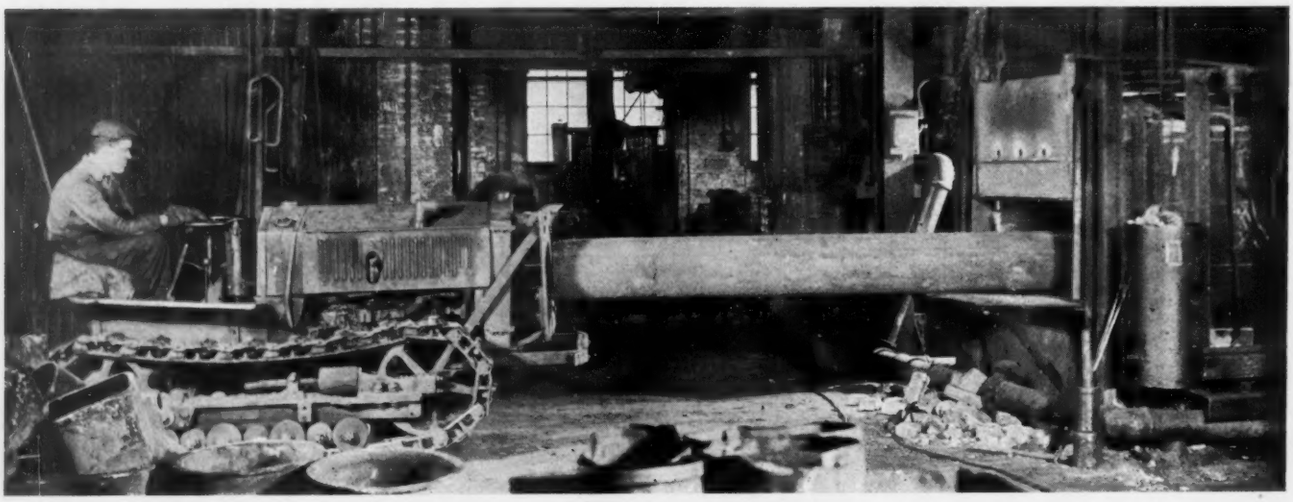
Fig. 5—An oil-soaked floor is no handicap to a crawler tractor in obtaining traction. Here heavy loads of steel tubes are being moved to storage. The tractor is moved through narrow aisles without difficulty

One type of crawler tractor, powered with either gasoline or diesel engine, is designed to be equipped with a front end loader with a bucket for handling miscellaneous materials. This tractor, which develops 35 horsepower on the drawbar, has controlled differential steering and is maneuvered easily. Both tracks pull on the turns as well as the straight-away and minimize gear shifting on the turns. Ground contact is 1764 square inches, with a maximum pressure of 5 pounds per square inch. Three speeds forward and one speed reverse are provided.

Using Front End Loader

The front end loader, shown in Fig. 7, is a compact, well-balanced unit that can be installed or removed easily. It is mounted on the side frames of the tractor and transmits the load to the lower track wheels. Carrying the load on each end of the track frame provides good distribution of load over the track wheel bearings and prevents shocks and strains from being transmitted directly to the transmission case, engine, engine frame, or engine springs, since the load is not attached to any of these parts.

Having no vertical boom, and featuring low overall height, the front end loader will operate without interference through doorways,



ON THE PROCESSING LINES, TOO

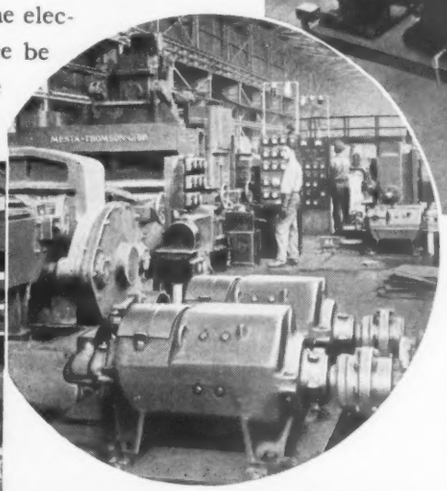
G-E EQUIPMENT HELPS J & L GET CONTINUOUS COLD-STRIP PRODUCTION

BEFORE, after, and between the rolling operations—that's when the processing lines play their part in cold-strip production. It's obvious, therefore, that low-cost production depends to a large extent upon the smooth, uninterrupted operation of these lines as well as upon that of the main-roll drives.

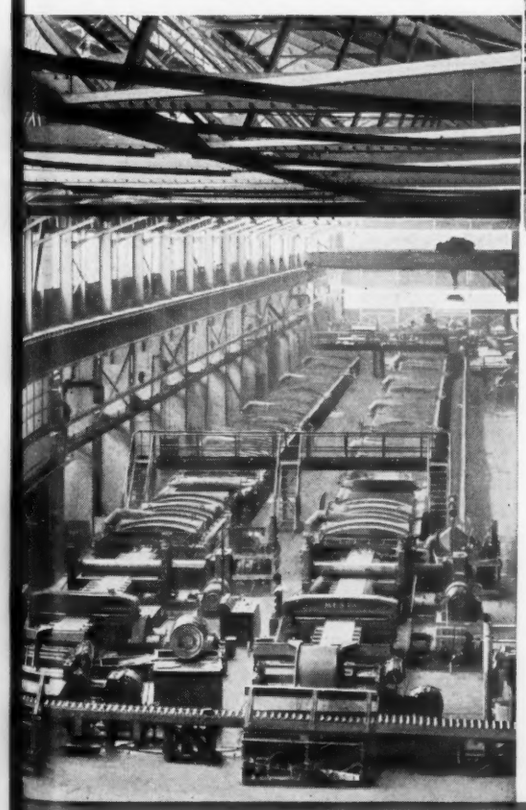
Narrow it down. The electric equipment is a vital part of all the processing-line equipment. Pickling, cleaning, recoiling, trimming, leveling, and shearing are all controlled and co-ordinated electrically. Skillful interlocking of the electric equipment protects both strip and machinery from damage. Operations are made easy by proper location of the control stations and of the various motor units.

It is highly important, therefore, that the electric equipment for processing-line service be dependable and that its installation be carefully thought out to the last detail.

Welder trimmer, stitcher, and pinch rolls driven by sturdy, dependable G-E d-c motors



Up-cut shear, welder, and stitcher, equipped with G-E motors and control. Note the conveniently located control stations, from which operations are kept in step all along the line



General view of pickler lines from finishing end. From start to finish, G-E equipment helps to keep the strip moving fast and smoothly

THERE IS ALWAYS A BETTER WAY

This is the spirit behind General Electric's contributions to the steel industry—contributions that serve to show how vital electricity is to modern steel production. If improvements in the design and application of electric equipment had not kept pace with improvements in steel-mill machinery and methods, the tremendous progress of the past ten years would have been impossible.

Why not do as the Jones and Laughlin Steel Corporation did when it built its new cold-strip mills in Pittsburgh? It gave the responsibility for the electric equipment on the processing lines to General Electric and received the benefits of high-quality equipment, skillful engineering, and undivided responsibility.

The experience of G-E engineers is wide. Their ability is proved. You can act with confidence upon their recommendations. Call the nearest G-E office for further information. General Electric Company, Schenectady, New York.

GENERAL ELECTRIC

011-335

Fig. 6 — Burned-out annealing boxes accumulate as scrap in a malleable foundry. Periodically they are loaded into trucks by the front end loader. Weighing 500 to 600 pounds each, these boxes are too heavy to handle manually

freight car doors, or low openings. No projections extend below the tractor to reduce clearance. The bucket can be dumped at any height, thus affording the advantages of both low and high lift in one unit. Hydraulic operation through a single lever provides smooth action and positive holding of the load in any position. Dumped by tipping, the bucket stops automatically at its lowest and highest positions.

The bucket, which is of the open-top type, is of one-piece construction and made from reinforced, high-tensile nickel-copper alloy steel. The cutting edge is reversible and replaceable, and replaceable wear strips are provided on the bottom of the bucket. An operating feature of the bucket is a tip-up device. The bucket is pivoted at the lower rear in such a way that as it is raised control rods cause it to tilt backward until it reaches an angle of 15 degrees with the horizontal and this angle is maintained during further lifting. This tip-up feature permits heaping materials on the bucket and prevents spilling them.

Reduces Handling Costs

Cost of handling materials in some plants is said to have been reduced as much as 75 per cent through use of a crawler tractor with front end loader. In one plant in Cleveland, 12 to 15 men were being employed to load coal, coke, sand and miscellaneous materials by hand. The man furnishing the trucks for this work on a contract basis found that his trucks were standing idle 60 to 70 per cent of the time waiting to be loaded. He figured out that if the company would equip its tractor with a front end loader this loss of time could be reduced and at the same time he could reduce his investment in trucks.

The loader, shown in Fig. 7, was purchased and the men were transferred to more important work. Operating the loader himself, the contractor was able to reduce the number of trucks on the job and the company, through the savings it realized, was able to pay for the new loader the first year.

In this same plant, burned-out malleable iron annealing boxes accumulate over a period of time. Previous to acquisition of the front end loader, these boxes were handled three times before loading the boxes for disposal as scrap. Average weight of the boxes is 500 to 600 pounds, making it impossible to load them by hand labor, consequently it was necessary to haul them into the main plant where one of the electric cranes was available to do the loading. Much of this handling is eliminated through use of the front end loader, for, as shown in Fig. 6, the boxes are easily placed in the bucket which then dumps them into trucks. The work can now be done at any time, whereas formerly it was necessary to schedule the operation so as not to interfere with plant production.

Since a front end loader can be removed quickly, a tractor serving an industrial plant always is available for other duties, such as hauling trains of trucks, moving machinery, operating bulldozers, etc. In many plants, power taken from a tractor is utilized to operate welding generators, air compressors and winches.

Cleaning Up Ore Boats

A somewhat lighter model of track-laying tractor, having 1488 square inches of ground contact and exerting a pressure of 4.6 pounds per square inch, is finding use in clean-up operations in ore and coal boats. For this service, the tractor is equipped with a hydraulic bulldozer attachment, as shown in Fig. 8. This attachment provides power up and power down on the blade, with quick positive control to regulate depth of cut at will of the operator. The blades can be set at 65 degrees to the centerline for either right or left side casting positions, and perpendicular for bulldozing.

Actions of the hoist are self-con-

(*Please turn to Page* 77)

Fig. 7—Equipped with a front end loader with a dump bucket, a crawler tractor can handle a wide range of bulk materials, such as coal, coke and sand

A.S.T.M. Revises Its Nonferrous Standards

(*Concluded from Page* 44)

of different organic coatings. Some of the factors are: Specific adhesion, physical state of the surface, chemical state of the surface, composition and structure of the coatings, and their degradation with age.

It is only in rare cases, usually those of gross negligence, as in improper cleaning, use of excess finish, etc., that a single simple cause may explain a given case of poor adherence, the speaker said. In most other cases, faulty adherence is attributable to complicated causes which frequently are not related to the initial strength of adherence bond.

The coating material may have degraded to such a point of weakness and brittleness that a slight impact or other external stress causes it to fall off. In other instances, a new and weakly-adherent interface may have developed as a result of high moisture permeability and thus destroyed the adherence of the finish. Finally, with thick coatings, sufficient internal stresses may have developed in certain coatings that even the best adhesional bond is overcome and as a result poor adherence of the finish produced.

Sampling of Coals

Committee D-5 on coal and coke recommended a new tentative method of sampling coals classed according to ash content. This method is applicable to ordinary commercial sampling of coal and is designed to have an accuracy such that in 95 cases out of 100 the ash content of the sample will be within ±10 per cent of the true ash content of the coal sampled. A modification also is given for conditions requiring greater accuracy.

A tentative revision of the standard methods of laboratory sampling and analysis of coal and coke (D271-37) was recommended by the committee for publication. This proposed revision provides for a change in the form of the method for determination of fusibility of ash to give the essential furnace requirements and procedure together with mention of specific furnaces which the committee has investigated and approved.

The sectional committee on classification of coals, functioning under procedure of the American Standards association, recommended for publication new "Tentative Definitions of Varieties of Coals." These definitions apply only to commercial varieties of bituminous and subbituminous coals. The committee also recommended that the "Tentative Method for Designating the Size of Coal from Its Screen Analysis (D431-36T) be approved for adoption as standard.

Committee D-3 on gaseous fuels, organized about three years ago, submitted no tentative standards but reported progress in laying groundwork for standard methods of tests.

An accelerated oxygen absorption test for determining chemical stability of lubricating greases was the subject of a paper by F. L. Wright and H. A. Mills, metallurgist and research engineer, respectively, research laboratory, Norma-Hoffmann Bearings Corp., Stamford, Conn. According to the authors, long-time storage and service tests have demonstrated that differences exist in chemical stability between batches of lubricating greases. The test developed discloses these differences. Breakdown of a grease is hastened by raising the temperature. In general, the induction period is reduced by half for each increment of 17.5 degrees Fahr. temperature rise.

A study of the effects on the stability of grease produced by its contact with metal surfaces was shown to be an important application of the test method to a specific problem. The catalyzing effect of copper-bearing alloys was demonstrated and usefulness of the accelerated test method for selecting inhibitors was shown. According to the authors, the catalyzing effect of gray cast iron, graphite, dirt, low-carbon steels and aluminum, as compared with tin, cadmium, zinc and 18-8 stainless steel is of much significance. The absorption method offers a means for investigating this problem with a view to explaining why these metals act as they do in presence of various types of lubricating greases.

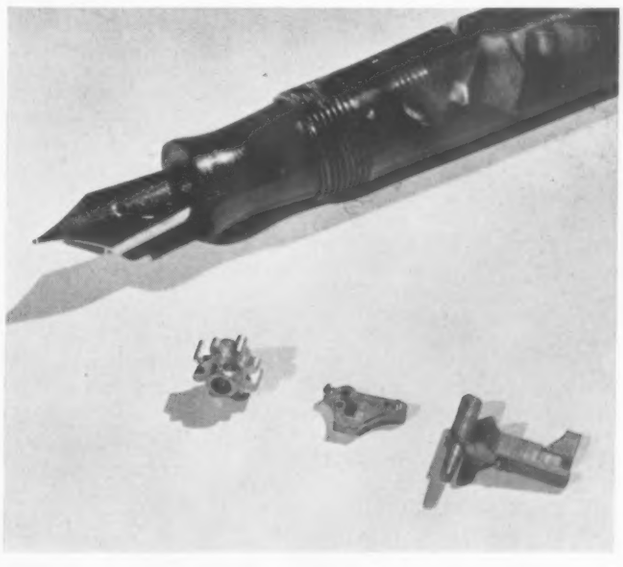
Moisture present during oxidation accelerates the breakdown of a lubricant although not to the extent produced by many metals. The accelerated oxidation method provides a rapid means for investigating effect of the numerous reinforcing and inhibiting agents suggested to improve lubricating greases.

Although most of the work reported was in connection with ball bearing greases of the soda or soda-lime base type, a few absorption tests on commonly used lime or aluminum-base greases and gear greases show a characteristic wide dispersion in absorption rates, indicating that a study on these products would probably parallel the data presented for ball bearing greases. It was the opinion of the authors that the test they devised will become useful in developing more stable lubricating greases.

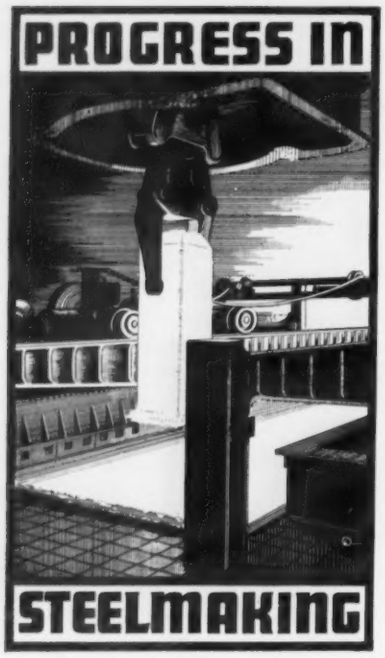
Small Zinc Die Casting Weighs Only 2.26 Grains

■ A variety of tiny parts die cast in zinc alloy to complex finished forms was illustrated in a feature article, "Little Fellows in the Parade of Die Castings," appearing on page 61 of the July 4 issue of STEEL. In the caption it was stated that the parts "range from a 4-grain stem guard for a pocket watch to a serrated dog duplicated 19 times in a popular radio tuning device." The "4-grain" weight was a typographical error; the statement should have read "4-gram stem guard."

Nevertheless, it is of interest to note that this error was not misleading in its conclusion, because zinc alloy die castings weighing considerably less than 4 grains are produced commercially. The accompanying illustration shows in the center an amazingly intricate die cast watch part which weighs only 0.147 gram, or 2.26 grains. It would require 193 of these parts to make an ounce.



The zinc alloy die casting shown in the center weighs only 0.147 grams, or 2.26 grains. It is a watch part and is extremely intricate. Photo courtesy New Jersey Zinc Co.



New Strip Welder

Retractable shear unit, mounted between rotary pickler and cold mill, has an automatic oxyacetylene welding head. No flash stripping or grinding is required

By ROBERT E. KINKEAD

■ INSTALLATION of a strip welder of a new type has just been completed by United Engineering & Foundry Co., Pittsburgh, at the plant of the Granite City Steel Co., Granite City, Ill. This unit follows the mechanical principle of the welder installed by United for the Ford Motor Co. several years ago in that the shear is retractable and the unit is mounted in a recoiling line. The new development at Granite City is the use of the Linde automatic gas head for welding.

One large steel producer in the West has been hand welding with gas for several years with great success, and the Granite City installation is designed further to develop that success through the use of mechanical means for handling and shearing the strip, and the application of automatic control to the welding heads as shown in Fig. 1.

Fed Into Shear

This recoiling and welding line at Granite City is placed in the line of production between the rotary pickler and the 48-inch reversing cold mill. The oiled coils are brought from the rotary pickler and placed in the coil box at the entry end of the recoiling and welding line. See Fig. 2.

The strip is fed from the uncoiler through an uncoiler-leveler into the combination shear and welding head. This shear is the open throat upcut type and is retractable, and after the back end of the leading strip has been sheared and the forward end of the trailing strip has been sheared and matched, the shear unit moves back away from its position and at the same time pulls the welding head into place, as shown in Fig. 3.

This combination shear and welding head is mounted a few degrees off the right angle position with reference to the movement of the strip, in order to provide a skewed weld. The principle of the skewed weld is to prevent the sudden bump of the entire surface of weld meeting the work rolls of the cold mills at one time. This theory is similar to the driving of an automobile across railroad tracks where the driver will approach the tracks at a slight angle to prevent the sudden impact of wheels striking the rails at the same time.

Ends Cropped

In operation, a pickled coil is placed in the coil box and the outside end is fed into the uncoiler-leveler. The shear is in the pass line at this time and the first end is cropped. This end is fed through the back tension rolls and on to the mandrel of the recoiler where it is gripped in the drum. This first coil is then run through to the end where the hydraulically-operated clamp operates to hold the strip and its trailing end is cropped by the shear. The sheared end is left above the pass line so that the leading end of the second coil may be run through the shear, clamps set, and this leading end cropped and matched.

The ends of the two coils to be joined by welding are now in the throat of the shear and each end is held by a hydraulic clamp to prevent misalignment prior to or during the welding operation. The

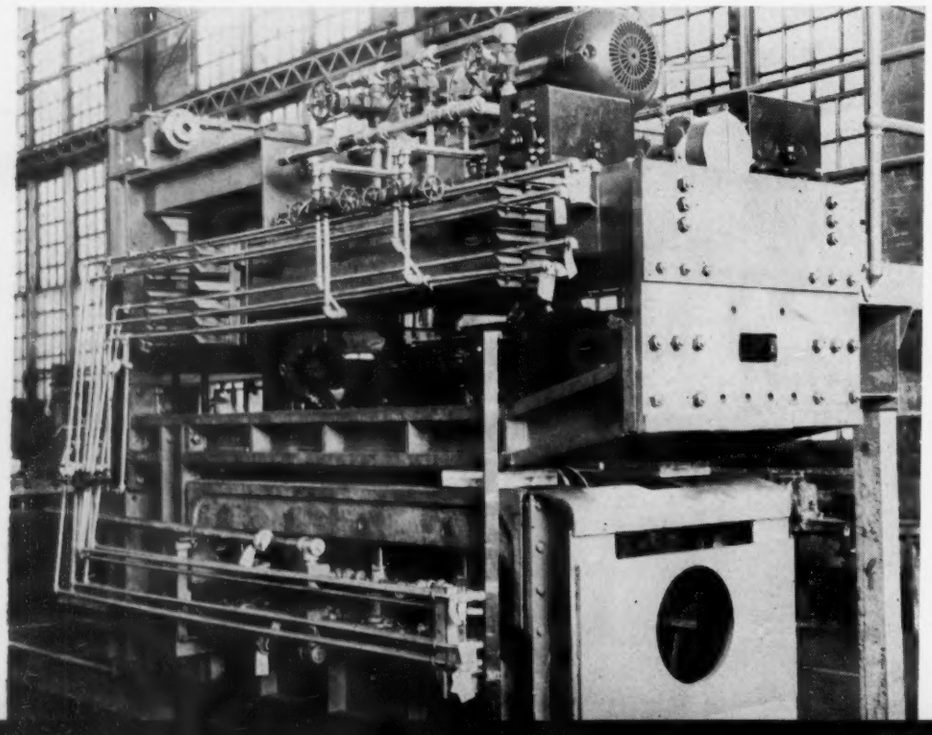


Fig. 1—Gas welder and clamps with end for attachment to shear shown in foreground

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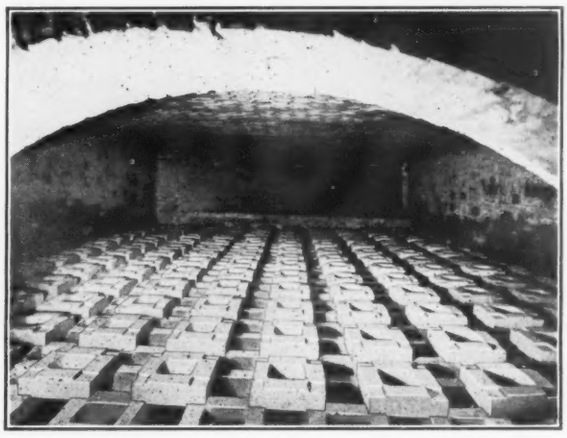
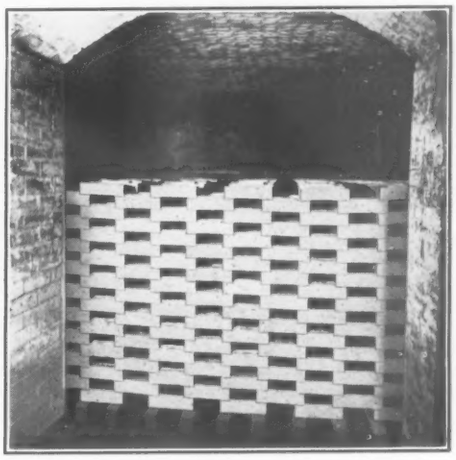
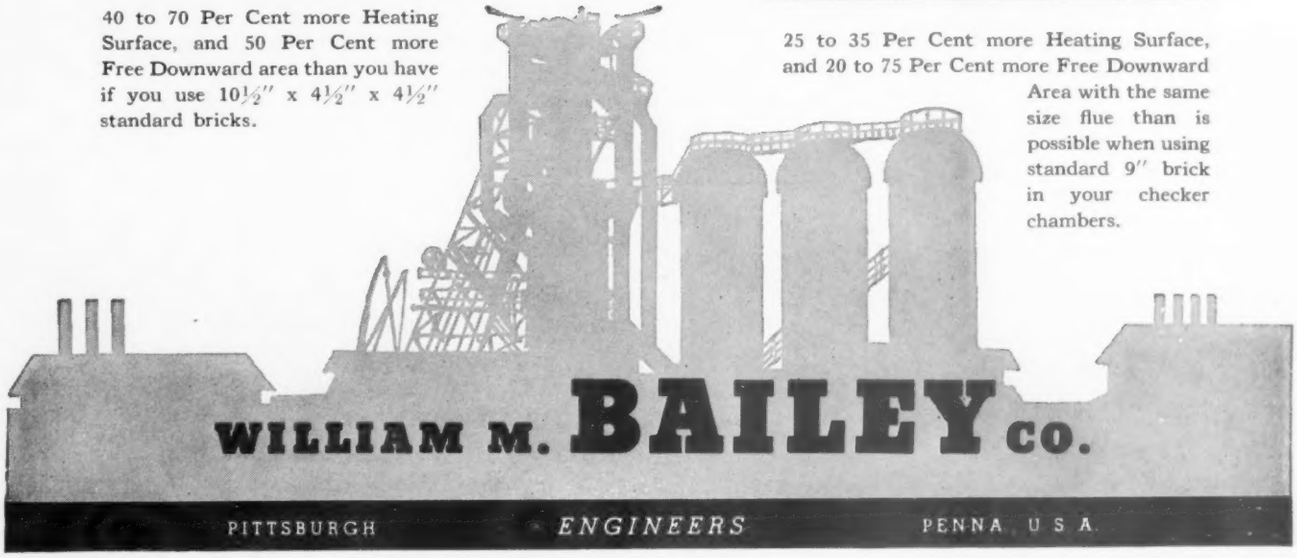


40 to 70 Per Cent more Heating Surface, and 50 Per Cent more Free Downward area than you have if you use 10½" x 4½" x 4½" standard bricks.



25 to 35 Per Cent more Heating Surface, and 20 to 75 Per Cent more Free Downward Area with the same size flue than is possible when using standard 9" brick in your checker chambers.



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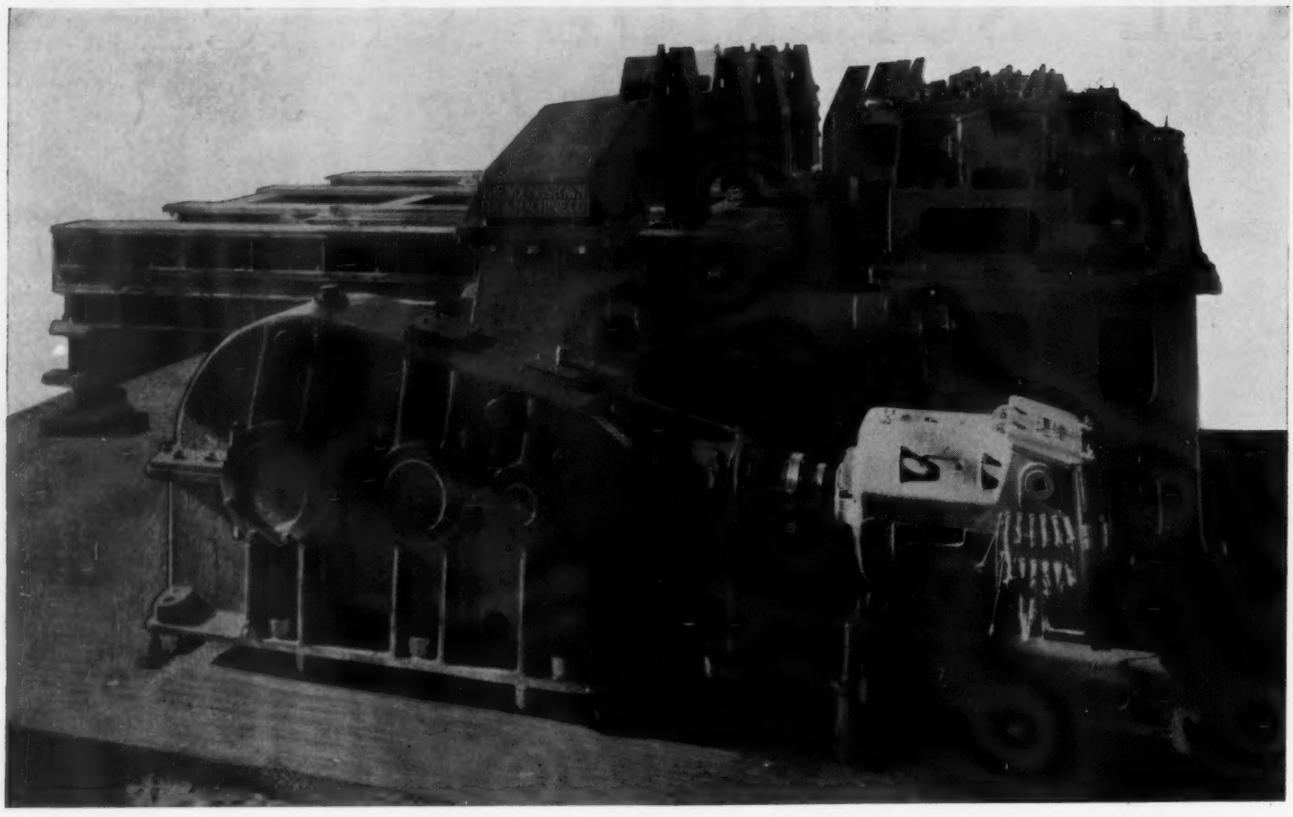

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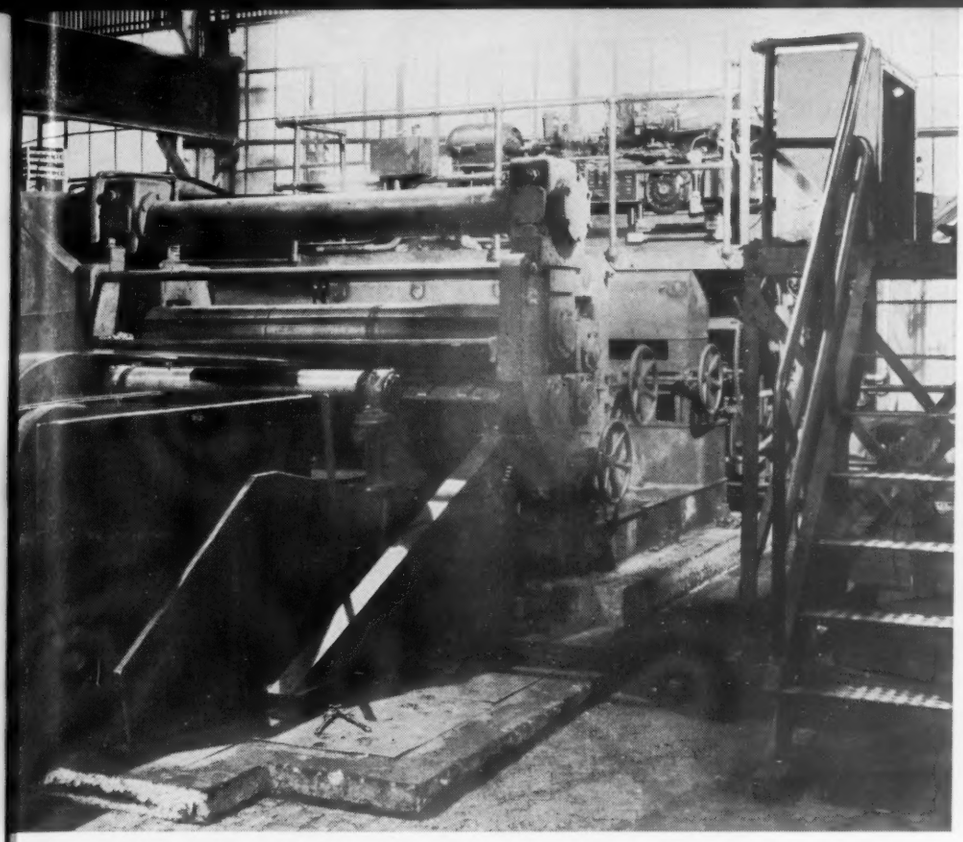


Fig. 2—Coil box and uncoiler-leveller at entry end of recoiling and welding line

shear cuts have been made at an angle of approximately three degrees with the longitudinal pass line, so that in subsequent cold rolling the entire length of the weld will not hit the rolls at one time as described above.

The next operation involves the shear cut and the automatic gas welder into the line to weld the sheared ends. This is accomplished by motor operated traverse gears with the shear-welder assembly moving on a track at 87 degrees to pass line. With the welder in position, its clamps are actuated to permit the two coil ends to be held by an additional clamping device at about 10 inches from the weld traverse line.

Utilize Blow Pipes

The welding is accomplished by automatically controlled multiple tip oxyacetylene blow pipes. The welding heat is automatically controlled by photoelectric cell to give the correct penetration from top to bottom.

After the weld is completed, the top and bottom heads automatically separate and the now completely joined ends of the two coils are run into the side clippers. Here the unmatched ends caused by the difference in strip widths are clipped out in a quarter moon pair of dies and the joined coils run on through the back tension rolls and on to the recoiler mandrel.

Where three or more coils are to be welded together, the operation of the shear and welder is repeated as required.

Objects attained by this Linde-United oxyacetylene type of strip welder are: 1—Great reliability of welds with reference to going through the cold mill without breaking; 2—Avoiding possibility of marking work rolls by absence of hard metal in or adjacent to the weld; 3—Elimination of necessity for flash stripping or grinding weld after it is made; 4—Speed suitable for operation in a recoiling or processing line.

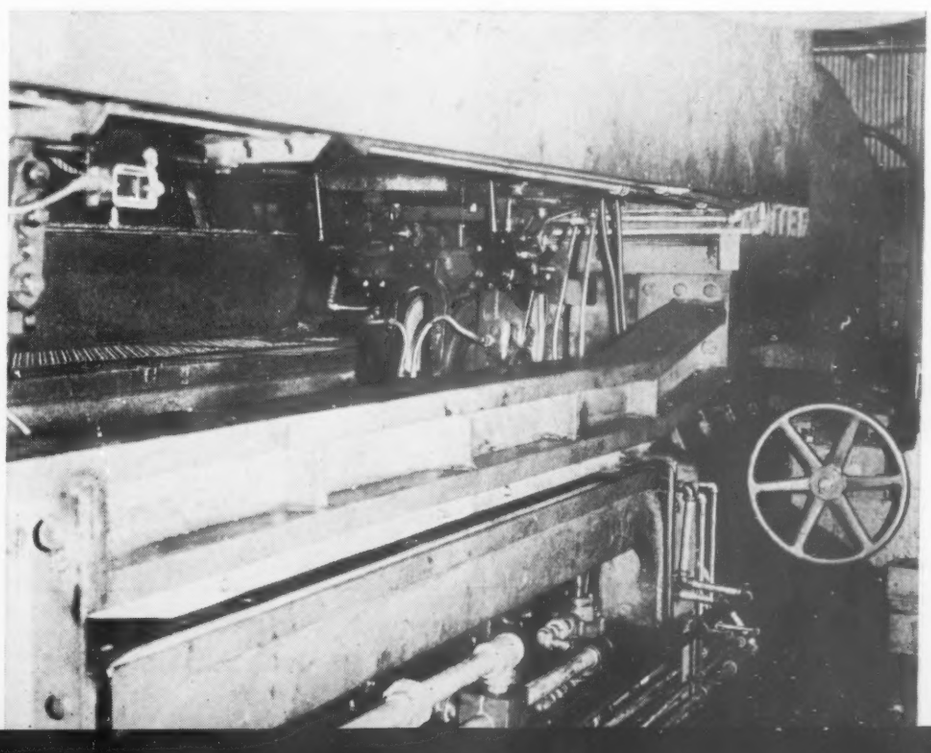


Fig. 3—This view shows the automatic gas welding head

Prepares List of Books Dealing with Engineering

■ A minimum list of books representative of engineering and its basic sciences has been prepared in a 16-page pamphlet by Charles E. Lucke, Stevens professor of mechanical engineering, Columbia university, New York. Titled "The Condensed Library of Engineering," the pamphlet contains books selected as fairly representative of all major divisions, and the list is as short as seems practicable.

The classification is based on the broader and more generally recognized divisions of engineering, and arranged approximately in the chronological order of development or general acceptance of these divisions as distinctive. A separate class is set up for books on mathematics, physics and chemistry, applicable to engineering, and another for books on engineering subjects that belong more or less equally well to more than one of the major divisions.

Other classifications are devoted to mining and metallurgical engineering, civil engineering, mechanical engineering, electrical engineering and industrial engineering.

Improves Capscrew Finish

■ Ferry Cap & Set Screw Co., Cleveland, is now offering Shinyheads, a type of capscrew in which the finish is emphasized, in sizes ¾-inch diameter and under. These screws have a hexagon head completely machined top and bottom, hexagon faces cut smooth and with a high finish. Body is smooth and point is completely machine turned.

Pendulum Train

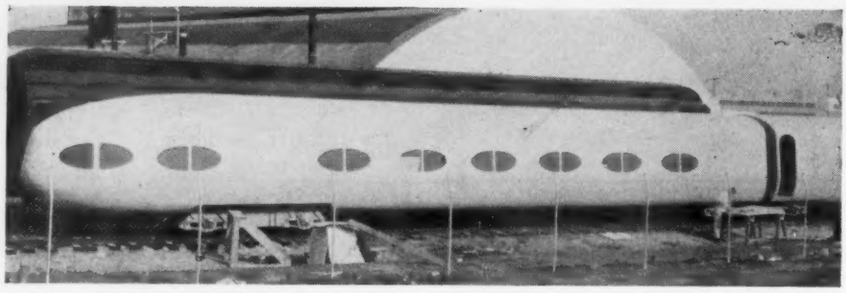
Unique car design utilizes much welded fabrication in new type of suspension system which may be an important improvement in railroad equipment

■ A NEW SUSPENSION system whereby the car body is suspended above rather than below the body's center of gravity is the outstanding feature of a new "pendulum" type of passenger car, recently placed in test service on the Atchison, Topeka and Santa Fe Harbor district railway line near Los Angeles.

Radically Different

The new suspension system is a radical departure from standard practice. Virtually suspended from the truck, the car body floats on soft, vertical coil springs which permits all the necessary truck motion and provide a new degree of smoothness in riding quality. Instead of the truck leaning outward in rounding a curve, the pendulum type car actually banks. Standing and walking in the car is said to be done with great ease and with a new feeling of stability.

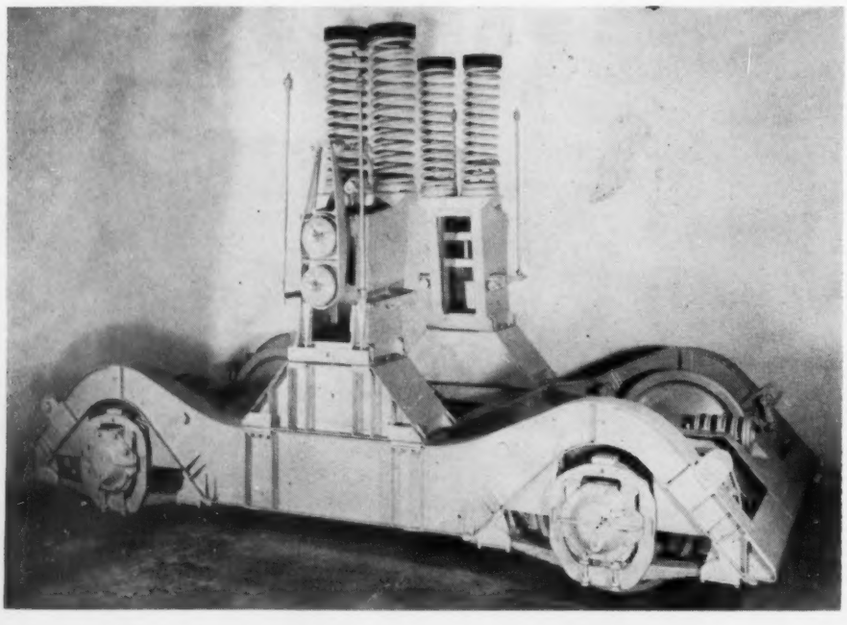
The design of the new truck can be seen in accompanying illustration. The wheel base is 9 feet for the end trucks and 12 feet for the articulating truck, which has been made separable so cars can be uncoupled to provide much greater flexibility when it comes to making up a train.



Pendulum type train. Car bodies virtually float on coil springs increasing passenger comfort and permitting car to bank around curves. Photos courtesy Lincoln Electric Co., Cleveland

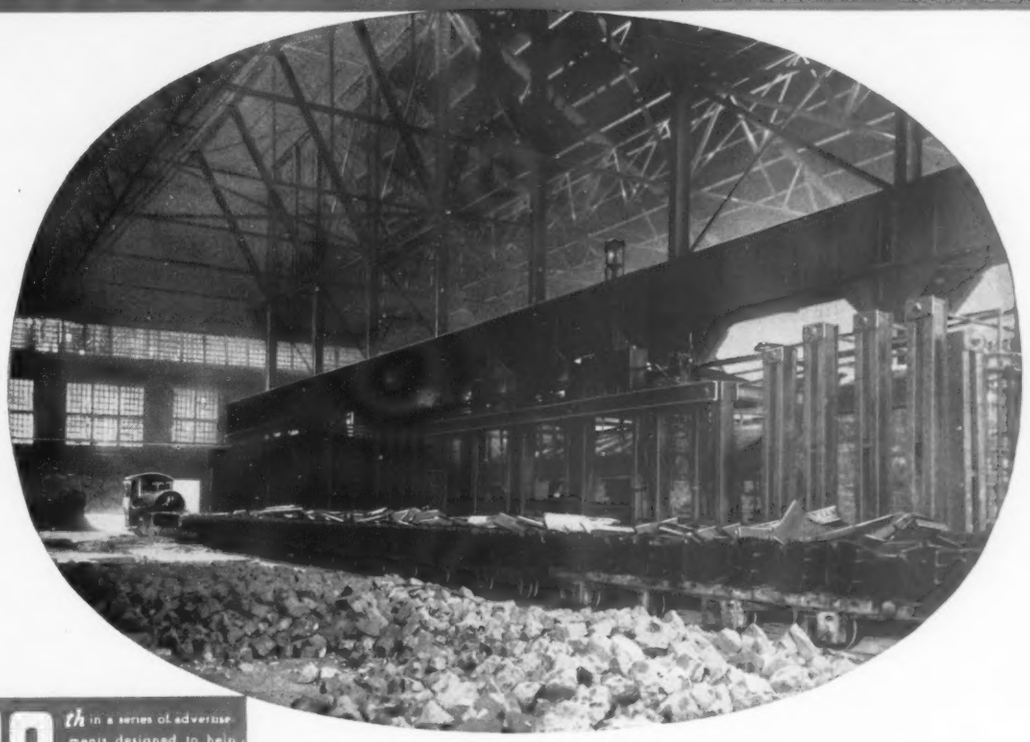
Pendulum unit is fabricated entirely of high tensile steel plate and shapes by electric welding. Side members are built-up box sections fabricated by cutting steel plate to size, forming it to shape and then fusing the component pieces of metal together into one integral unit. Adequate stiffness and rigidity are obtained by stiffeners arc welded into the members at various points. Transverse and diagonal structural members of the frame also are fabricated. Constructed in this manner, the frame is one single homogeneous structure. All welds were stress relieved following fabrication.

This new train is considerably lighter in weight than the newest



Car truck features radical departure from standard truck design. Weight of car body is carried on coil springs above the body's center of gravity. Truck is all arc welded of high tensile steel

QUALITY IN WIRE
starts at the FURNACE CHARGE



18th in a series of advertisements designed to help you make a better selection of wire for maximum value per unit of cost

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WISSCO WIRE
by Wickwire Spencer

streamliners. Although the body of the experimental unit was constructed of wood, the design now under way for future cars utilizes high-tensile steel, achieving lightness of weight without sacrifice of strength.

Design and construction of these new cars has been carried out by Cortlandt T. Hill, son of Lquis W. Hill, retired chairman of the board of the Great Northern Railway Co. and grandson of the late James J. Hill. Associated with Mr. Hill in the work was William E. Von Dorn, engineering research associate in the California Institute of Technology and inventor of the suspension system employed.

Data on the experimental train illustrated is as follows: Overall length of the front car, 70 feet; overall length rear car, 79 feet; overall height above rail, 11 feet; overall width of car, 10 feet 2 inches; inside width of car, 9 feet 9 inches; inside height above floor, 8 feet 2½ inches; height of floor above rails, 30 inches. Weight of front car is 29,000 pounds; rear car, 30,000 pounds; front and rear trucks, 8900 pounds; middle truck, 10,900 pounds.

Organizing to Reduce Excessive Stub Losses

■ IMPORTANCE of utilizing short pieces of welding rod is more or less realized by all welding operators. Nevertheless there is a natural tendency to discard short pieces of rod even though there actually remains a length sufficient for further use.

What can be done to emphasize the importance of this item and bring it forcibly to the attention of welding operators is well illustrated by methods employed at the Youngstown, O., division of United Engineering & Foundry Co. Seeking some way to make his welders more cost conscious, N. T. Lamond, welding supervisor at this plant, had a chart prepared and hung over the rod storage bins as shown in the accompanying illustration.

Points Out Losses

The chart points out just what excessive rod loss amounts to over a year's time. It states that in 1937 this company used 96,000 pounds of welding rod which cost $7680. Normal loss is shown on the chart by figure of a 2-inch stub. A 3-inch stub represents a waste of $480 worth of rod and a 4-inch stub is shown to be accompanied by a $960 loss each year.

Relating cost of welding to weight of steel joined, the chart further states that this company fabricated 6,000,000 pounds of steel by welding during 1937. At this rate, cutting cost of welding only 1/100 of a cent per pound is shown to produce a saving of $600, a reduction of 1/10 of a cent per pound giving a saving of $6000 per year.

Finally, the chart tells how the welding department is judged by the cost per pound of work done and emphasizes that costs must be kept to the minimum to keep the work in that particular department.

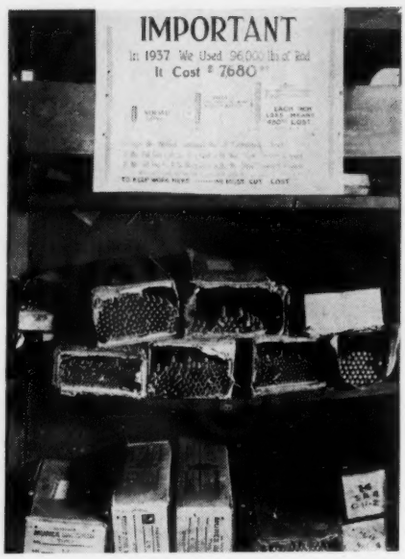

Chart at stock bin emphasizes importance of utilizing welding rod stubs

Another important step in this campaign to utilize short lengths of rod is the placing of signs on each welding machine which tell the operator to return all rods to the stock shelves each time he leaves the job. Thus no short ends are lost or left unused. These precautions are expected to show a goodly saving in this plant and could be used to excellent advantage in many welding shops in an effort to reduce stub losses.

Portal Trusses Are Jig Welded

■ **Special type of all-steel welded truss being made at Cleveland plant of Austin Co. Welding is done on jigs formed by clamping guides to heavy framework set above floor level so welding can be done at convenient height as at left. On right, trusses are being cleaned and painted prior to shipment**

Electrode Developed For Manganese Steel

■ Designed for welding on parts subject to heavy impact, such as manganese castings, railroad frogs and crossings, a new electrode, known as Smootharc Harmang, has been developed by Harnischfeger Corp., 4400 West National avenue, Milwaukee.

It is characterized by unusual toughness and hardness. Its base metal is nickel manganese steel, ranging from 11 to 14 per cent nickel manganese and 3½ to 4½ per cent nickel, with a carbon content in excess of one per cent. This electrode operates with the work negative and the electrode positive. It is made in sizes from ⅛-inch to ¼-inch, for use with currents ranging from 90 to 140 amperes.

Offers Spectacle Goggle

■ A new type spectacle goggle, equipped with Super-Tough lenses and designated as Style WV1, has been added to the line of more than 300 goggles now manufactured by Willson Products Inc., 273 Thorn street, Reading, Pa.

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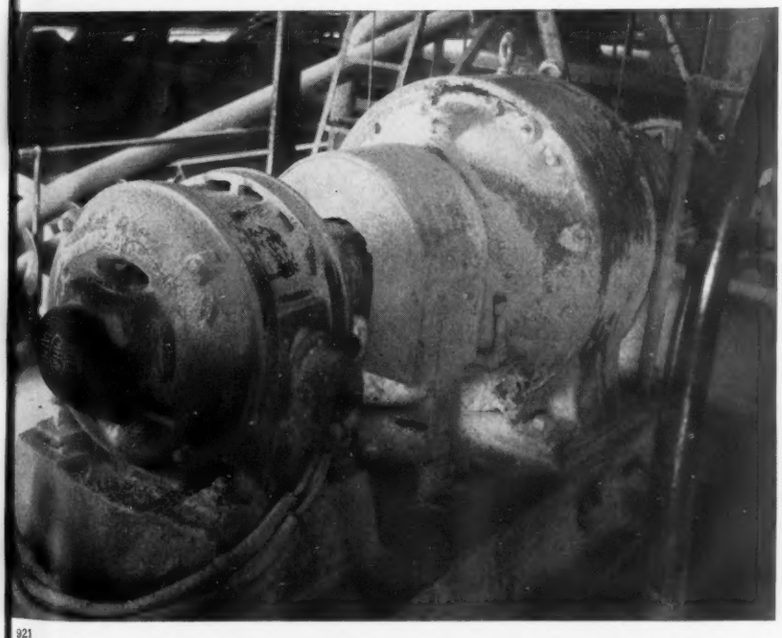
Keep Your Production And Profit Curve Up With Allis-Chalmers "LO-MAINTENANCE" Motors



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No heavy service cost with this Allis-Chalmers "Lo-Maintenance" Motor that has swallowed abrasive dust every day for years.

Nothing runs up production costs more surely and quickly than shutdowns because of motor failure. The difference between red and black on the balance sheet is often determined by the amount spent for motor maintenance. For insurance against this waste, install Allis-Chalmers "Lo-Maintenance" Motors—they will give you years of uninterrupted service.

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No Costly Shutdowns!

Informed engineers and production men have found Allis-Chalmers "Lo-Maintenance" Motors the sturdiest on the market today. They recommend them for their ability to keep up production without costly shutdowns that cut so deeply into your profit column.

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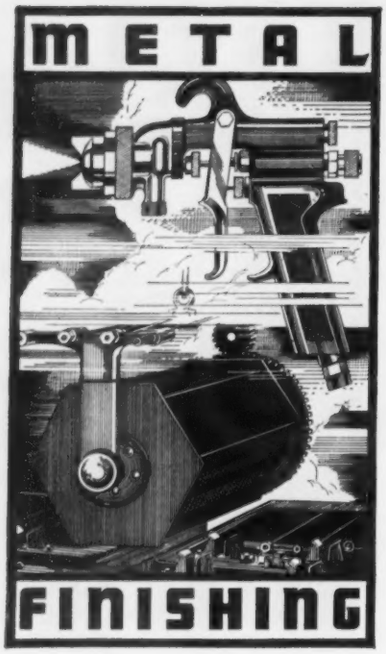


Quality Wrenches

Modern methods give highly-finished surfaces which enhance appearance of a high grade product and help break down sales resistance

By FRED B. JACOBS

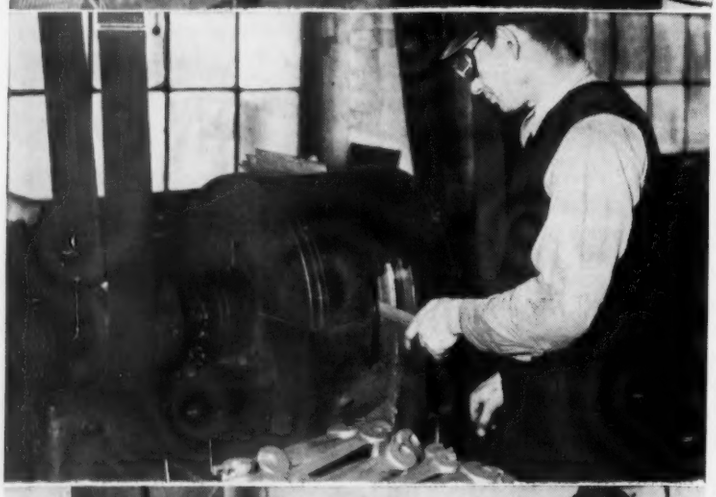
■ USE OF a high surface finish on tools is not essential to their utility as they would be just as useful with a plain or rough finish. However, highly finished surfaces have long been employed to enhance the appearance of a high grade product and to help break down sales resistance.

A good example of the importance attributed to finishing is seen at the plant of the Billings & Spencer Co., Hartford, Conn. This company manufactures a line of high grade, drop forged, open end wrenches varying in size from only a few inches to about 4 feet in length. Many of these are made from alloy steels containing chromium, nickel, vanadium and molybdenum. All are given a high finish.

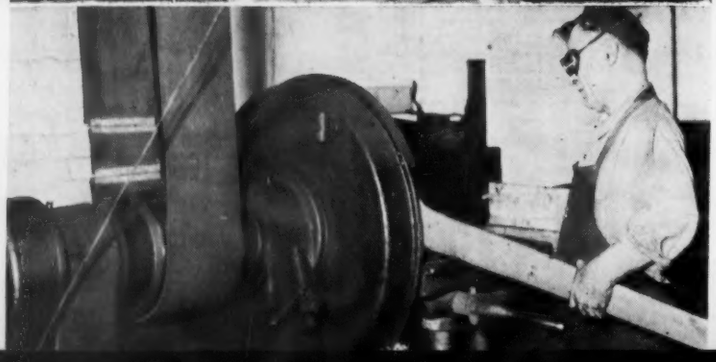
New Technique

This company has been in business continuously for the past 60 years and is said to have operated the first commercial drop forging plant in the United States. As polishing always has been an important operation here, long experience has resulted in working out a technique for doing this work effectively and economically on a high production basis. Accompanying illustrations present some of the principal steps and equipment involved.

■ This is the first step in finishing the wrenches, rough grinding to remove irregularities and flash marks left by the trimming dies. Here 12-inch manufactured alumina wheels operate at a surface speed of 5000 feet per minute. After rough grinding, wrenches are tumbled in sand and cold dropped



■ Here a double disk grinder works on both surfaces of the wrench which is placed on a work holder between the two wheels and a lever feed actuated to bring the wheels together. The 18-inch diameter, 3-inch thick wheels have a 4-inch grinding face



■ Large wrenches are handled by special equipment. This operator is finishing the sides of a 44-inch wrench having a 4⅝-inch opening and weighing 47½ pounds. Wrench is held against an angle plate over a block positioned to receive it and fed against the disc by hand-lever feed

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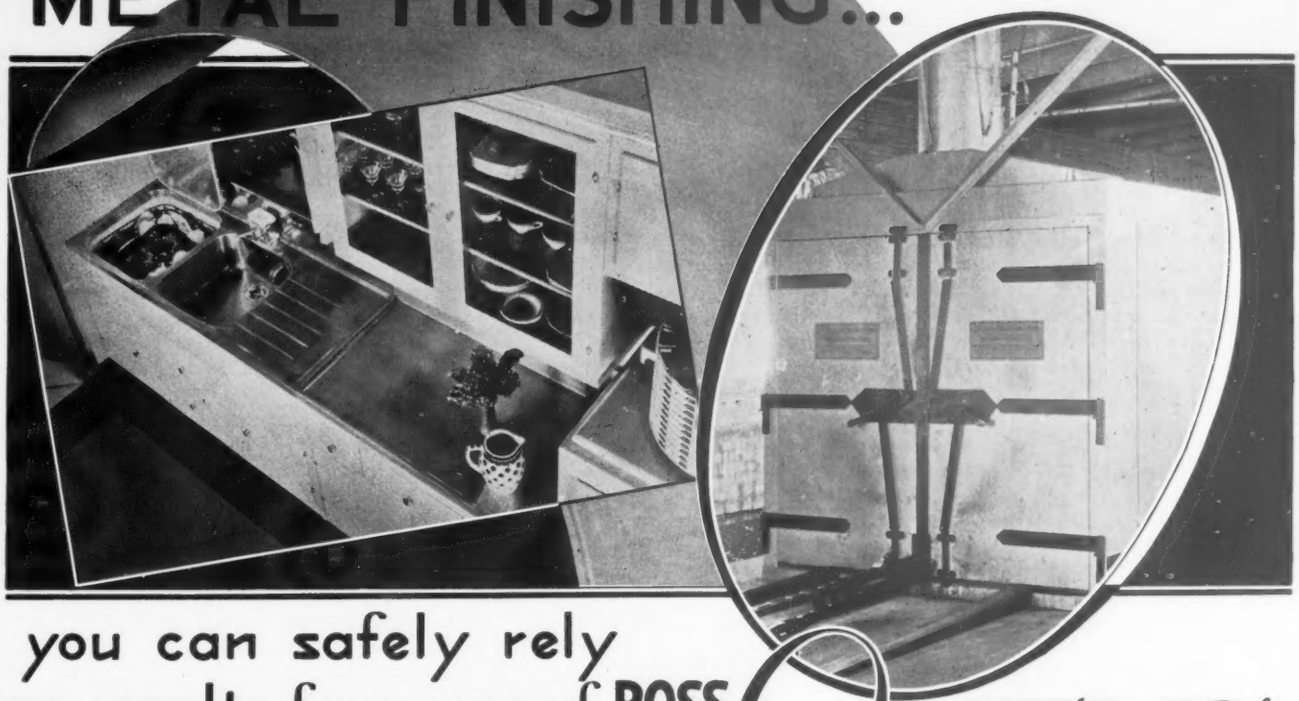
METAL FINISHING...



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■ After size designation is stamped on, ends are milled in fixtures holding ten or more wrenches. Next comes the rough polishing operation shown here. The polishing lathes use stitched canvas wheels with sections glued together set up with No. 70 alundum. Wheels are from 12 to 16 inches in diameter with 2½ to 3-inch face

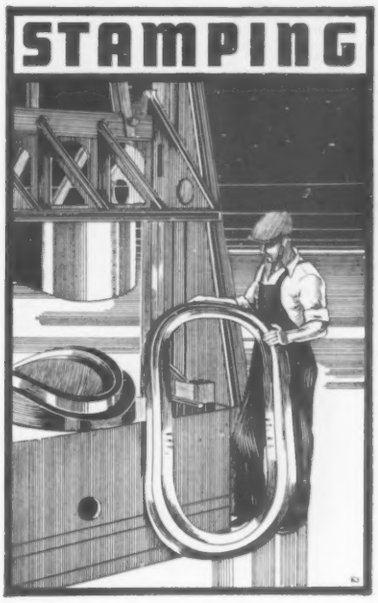
■ The action of the milling cutters leaves sharp edges which are removed in this operation, called burring. It requires skill to manipulate the work rapidly and to remove just the right amount of material

■ Following burring, wrenches are heat treated and subsequently sandblasted to remove fire scale. Both ends are then finish polished, one of the production lines being shown here. Leather covered wood block and compressed leather wheels are used with No. 90 alundum dry, followed by oiling with No. 120 material and finishing with No. 180 material, grease and oil

■ The wrenches are plated and buffed. Belt polishing is employed on certain other products with sequence of operations similar to the above. Here belt polishing permits following the curved shape of the inside surface of plier handles by flexing a slight amount as it passes. If a wheel were used, it would be necessary to form the wheel face and maintain the correct shape

■ Polishing thousands of wrenches daily requires a large stock of wheels. This shows the special department where about 500 are set up and kept in stock at all times. Quality and preparation of glue are important factors

■ On this operation rope stock paper abrasive disks, 20 inches in diameter with 14-inch holes, are being set up. Paper disks are purchased cut to desired shape, coated with glue, placed in a pan of abrasive and the abrasive tamped on as shown



Making Sky Ships

Using live rubber in conjunction with forms of negligible cost, duralumin parts are formed economically on huge cylinder presses. 35 parts may be formed in one stroke

STARTING from nothing in 1921, Douglas Aircraft Co. Inc. today has nearly a million square feet of floor space at Santa Monica, Cal., devoted to airplane manufacture. It has more than 5000 employes and the engineering department alone employs 400 men.

Such growth is due not only to design leadership but also to effective production methods to meet the peculiar problems encountered in airplane manufacture. In such a rapidly changing field as design and production of commercial air transports, the pitfalls of inadequate equipment, obsolescence and mounting production and handling costs had to be studiously avoided.

Production Efficient

Today, with new designs continually developed and built, production is high in efficiency. All operations are carefully planned so that thousands of parts proceed in proper sequence along the production line and are assembled into their proper positions on the ship. Due to its light weight and strength, duraluminum plays an important part in Douglas transports. At least 3000 parts assembled into these ships are made of this material, including wing and cabin coverings, reinforcing ribs, bulk heads, braces, fairings, baffles, floor frames, wing beams, gas tank frames, etc. Thicknesses range from 0.003-inch to 0.125-inch.

Manufacturing these many duraluminum parts presented a cost problem for a long time. In the beginning each part was shaped by hand aided by a variety of tinner's tools to provide accuracy required for perfect rounding and beading of intricate shapes. Seeking a way to make these at lower cost, the first suggestion was to form them on a hydraulic press.

Airplane building is not a mass production job. Only a few parts, similar in size and shape, are required at one time. This means die costs ordinarily would be so high as completely to eliminate the possibility of using this method. Douglas engineers believed that an ingenious method involving the use of live rubber in conjunction with a form of negligible cost would enable them to shape duraluminum parts in any fashion. A small hydraulic press was purchased and experimental work undertaken.

However, even the smallest hy-

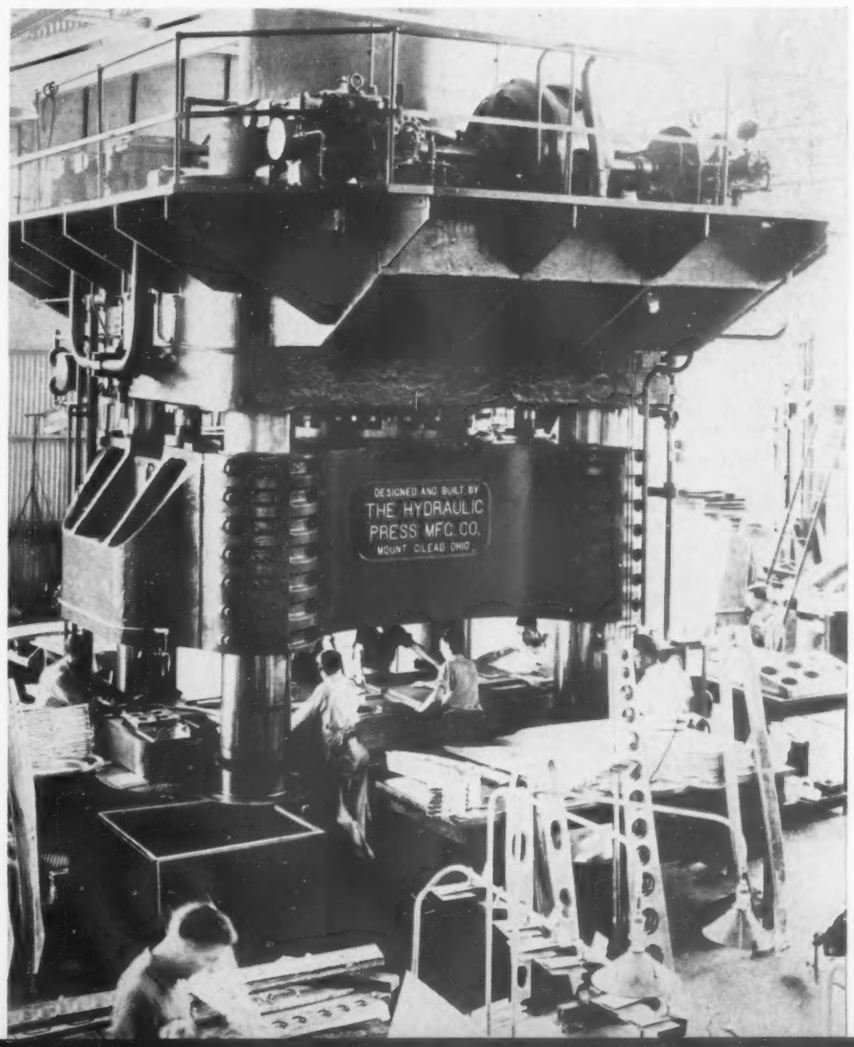


Fig. 1—Showing multiple forming operations on duraluminum airplane parts on 5000-ton hydraulic press. Photos courtesy Hydraulic Press Mfg. Co., Mt. Gilead, O.

draulic press was too costly an investment for producing one piece at a time. Also it would have required too many of these presses to permit required production schedules to be met. Since satisfactory results had been obtained with small pressing area, it indicated a large pressing area would permit shaping a number of different parts simultaneously.

Accordingly the first large hydraulic press was purchased. It has a pressure capacity of 2000 tons, is of the vertical, downward-acting type and has a platen worked by a single-acting ram and two single-acting pull-back rams. Pressing areas are 92 x 72 inches at sides; 60 x 180 inches at ends with 92 x 60-inch clearance between rods. Operating system includes combined manual and automatic press travel controls, a radial pump directly connected to an electric motor mounted on top of press making it a completely self-contained unit.

A product of Hydraulic Press Mfg. Co., Mount Gilead, O., it includes this company's Fastraverse system of operation which makes the heavy press a practical, high-speed production machine. It provides rapid ram travel to the work, a slower pressing speed to permit the material to be pressed to most readily conform to the contour of the dies, and a rapid return of the ram to its initial position. Closing and return speeds on this press are 250 inches per minute while pressing speed is 13 inches per minute.

System of procedure is quite simple. Parts are first stamped to required shape from flat sheet with holes and outlines cut as required. Then a large number of these shapes are placed over forms on the flat surface of press bed to fill the entire bed area. After positioning, ram is actuated, pressing all the parts into shape with one stroke. At least a thousand different parts are handled in this manner, some with as much as a 4-inch draw.

Second Press Larger

Success of initial operations with this first press pointed the way to increased economies when it became necessary to purchase a second press recently. Douglas' production engineers wanted more pressing area in their next press so more parts could be shaped at one operation. Result is second press has a pressure capacity of 5000 tons, said to be the largest self-contained hydraulic press and the most powerful high-speed press of the modern self-contained hydraulic type.

Also made by Hydraulic Press Mfg. Co., this machine required nine special, 12-wheel flat cars to ship it, disassembled, to the Douglas plant. Press weighs 840,000 pounds. Platen and bed at sides are each 8 x 6 feet in area; at ends 5½ x 15½ feet. Plenty of opening is provided to enable operators to place work on the bed.

Total pressing force of 10,000,000 pounds is created by a single ram, 6 feet in diameter, actuated by oil under pressure of 2500 pounds per square inch. A battery of four radial pumps of the variable reversible delivery type are direct driven by two 150-horsepower electric motors. Hydraulic power from these pumps is applied to the press ram directly without intervening valves. Speed and direction of press movements thus are controlled by volume and direction of pump output to make possible smooth, high-speed operation.

Three thousand different aircraft parts, all of duraluminum, are shaped on these two presses. Method used in shaping these parts has reduced tool costs as much as 25 to 1 over conventional tool requirements. As many as 35 parts are shaped at one stroke of the press, depending upon their size. Largest are about 13½ x 2 feet.

Joined By Catwalk

Both 2000 and 5000-ton presses now are working side by side. They are joined together at the top of the press frame by a catwalk, enabling an operator to reach the operating units of each press on one trip.

To facilitate removal of surplus material, four pits are provided on each press, one pit being located at each corner. Scrap material is thrown into these pits which open into the basement below where it is baled.

In addition to providing manufacturing economies, use of these two presses has made practical another major economy; by having the parts exactly uniform in size and shape, it is practical to make them interchangeable in various planes. Today, about 75 per cent of these parts are interchangeable.

Fig. 1 shows the 5000-ton hydraulic press with a large number of parts around it. A crew of six men are busy loading and unloading parts on the press bed. A seventh man stands at the controls. As will be seen, parts are positioned on press bed from both sides and both ends. This illustrates how it is possible to obtain high rate of production necessary to make opera-

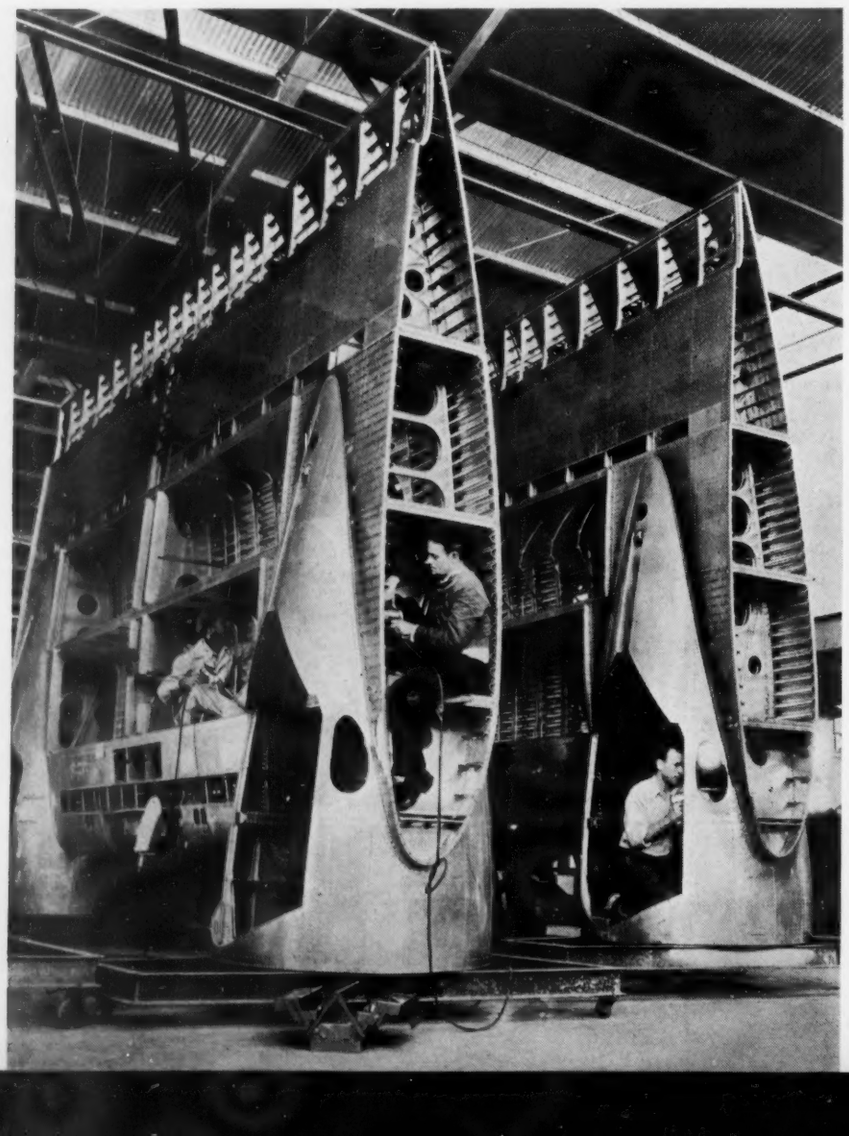


Fig. 2—Central wing sections of huge Douglas transports in process of assembly. Practically all of the many complicated parts shown here were formed by the new method described

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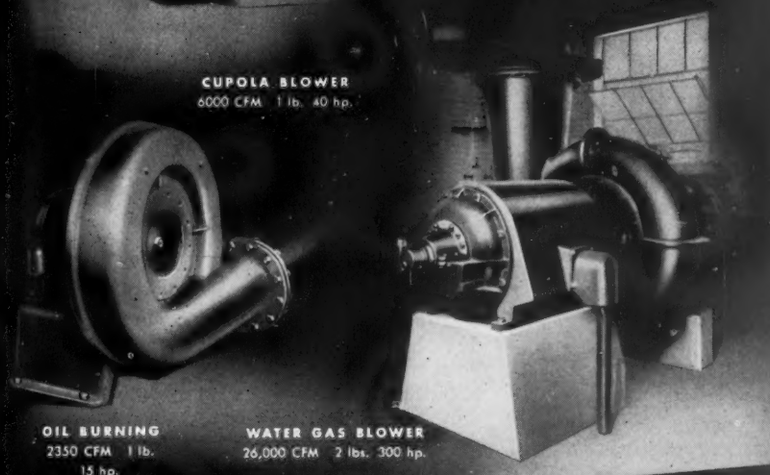
BLAST FURNACE BLOWERS
60,000 CFM 25 lbs.
6000 hp.

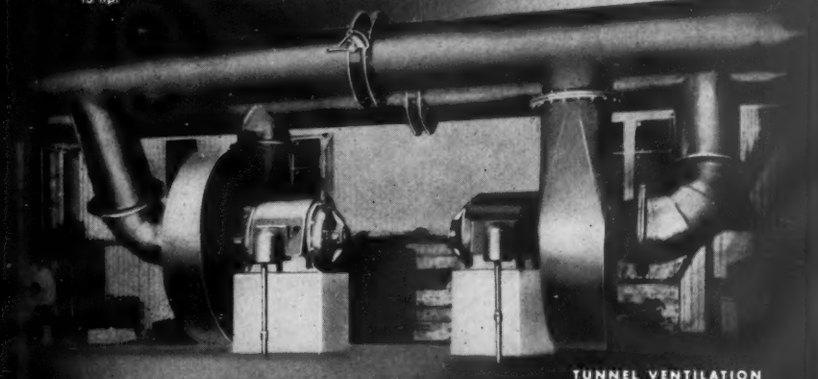


CUPOLA BLOWER
6000 CFM 1 lb. 40 hp.

OIL BURNING
2350 CFM 1 lb.
15 hp.

WATER GAS BLOWER
26,000 CFM 2 lbs. 300 hp.

YEAST AGITATION
11,000 CFM 6 lbs.
400 hp.



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100 hp.

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tion of such a huge press an economic success.

Fig. 2 shows a number of complicated reinforcing shapes required by these huge transports. The huge sections shown form wing backbone and carry two engines in nacelles, partly formed here. Outer wing assembly extends at each end of these sections and the main body of the plane rests over the open central portion seen in the illustration. Practically all of the parts seen here, with the exception of the corrugated sheet, are formed on the hydraulic presses.

Economies Derived in Using Firebrick Soaking Pit Covers

■ SEVERAL steel companies recently have derived economies by using insulating firebrick in soaking pit covers. Because of their light weight such brick have lightened the cover structure materially, requiring less power or lighter motors for lifting and handling. The relative ease of handling lighter covers has reduced damage to brickwork and lessened the extent and frequency of necessary repairs. The covers in use have proved to give longer service life than those built of heavy firebrick. Because of their low heat storage and thermal conductivity, insulating firebrick have realized appreciable fuel savings in the pits in which they are used.

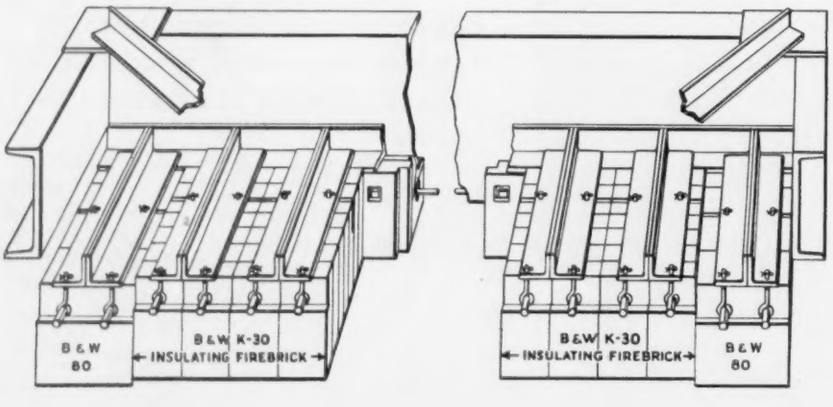
Successful Operation

A 5-foot 6-inch x 14-foot 11-inch cover of insulating firebrick on a pit operated at 2600 degrees Fahr. and fired with producer gas, heating 20 to 24-inch stock in approximately 6-foot lengths, operated continuously for five months before any repairs were necessary. The first repairs were attributable directly to careless handling of the cover but were not serious. With occasional repairs, this cover was in service 38 months before being rebuilt. In the same cover heavy firebrick had required repairs after three months and gave an overall service life of only eight months.

Another company rebuilt a soaking pit by removing the dividing wall between two pits and bolting these two 7 x 9-foot covers together. As existing equipment was unable to lift the resulting 7 x 18-foot cover when heavy firebrick was used, insulating firebrick was employed with complete success. This cover has been in service for more than 18 months and gives promise of long life. Three other such 7 x 18-foot and four 7 x 9-foot covers are also now in use in the same plant. Several similar covers now are in service in this country and one is under construction abroad.

A number of soaking pits using Babcock & Wilcox K-30 insulating firebrick have been built using frames designed for heavy firebrick installation. In these and some other installations sprung arch construction was utilized with entire satisfaction. These insulating firebrick, however, permit the use of Babcock & Wilcox patented flat suspended roof construction in which the insulating firebrick, properly drilled, are "threaded" onto rods suspended from supporting members. This construction permits easy and quick repair and replacement of the cover when necessary. Covers designed for the use of such insulating firebrick can be built of lighter members and with less bracing than those designed for the use of heavy firebrick, thus affording a saving in construction costs. It is a safe practice to use a ring of heavy firebrick around the edges of a cover built of insulating firebrick to resist the wear and abrasion to which these parts of covers are normally subjected.

Construction details of a patented flat soaking pit roof lined with light weight, insulating brick. Drawing courtesy Babcock & Wilcox Co., New York



Arc Welding Handbook Now in Fifth Edition

■ *Procedure Handbook of Arc Welding Design and Practice*, fifth edition; fabrikoid, 1012 pages, 5½ x 8½ inches; 1243 illustrations; published by Lincoln Electric Co., Cleveland; supplied by STEEL, Cleveland, for $1.50; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

The welding handbook is issued each year, to include all new data essential for most efficient use of arc welding in its varied applications. It is encyclopedic in scope, concisely written and fully illustrated, a complete arc welding reference guide. It is prepared for use by designers, engineers, architects, production managers, welding supervisors and operators and also contains information of use to draftsmen, steel fabricators, erectors, foremen, cost estimators, maintenance managers, shipbuilders, pipeline contractors and welding students.

Important new machine design data include new examples showing how machine parts are built from standard rolled steel shapes, design studies of machine parts and complete assemblies, case studies of change to welded design, illustrated examples of 140 welded designs for a wide variety of applications, studies of design development of three actual machines.

New structural design data include new calculations based on up-to-date sizes of mill shapes and on accepted strength value of shielded arc weld metal, additional data on the design of welded girders and welding of thin plates to thick plates, six new studies in the design of trusses of various sizes and applications, discussion of the new type of beam construction and new information on costs relative to fabricating shop practice.

Improves Resurfacer

■ Flexrock Co., 800 North Delaware avenue, Philadelphia, announces the improved Ruggedwear Resurfacer, processed with cellulose for longer service, greater coverage and lower cost in resurfacing new and worn floors.

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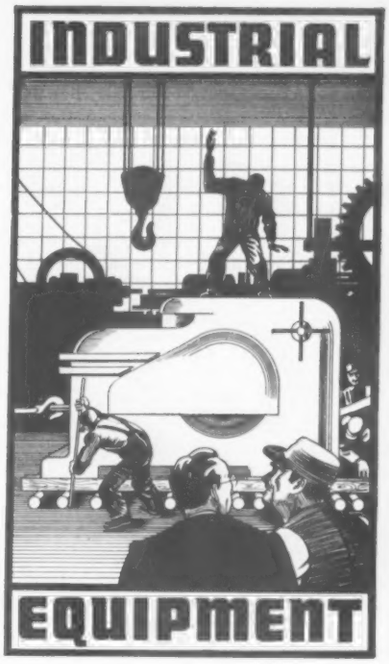
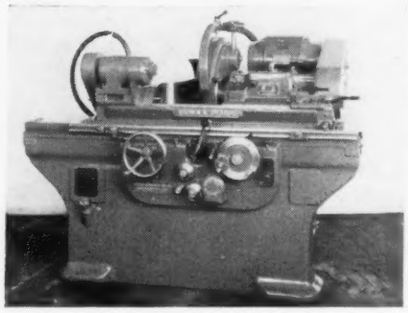


Grinders Have Centralized Controls

■ Brown & Sharpe Mfg. Co., Providence, R. I., has announced two grinding machines, Nos. 10 and 12, designed for rapid cylindrical grinding of small and medium-sized parts to close limits on a production basis.

Compact and completely self-contained, these machines are electrically-powered and are operated by



a simple arrangement of hydraulic and electric controls grouped at the front.

The hydraulic system provides a smooth and powerful table drive, and there is an adjustable dwell, ranging from zero to ¾ second at each reversal. In addition, hydraulic system supplies filtered oil for automatic gravity lubrication of wheel spindle, wheel slide ways, cross feed mechanism and table ways.

Individual motor drives are provided for wheel spindle, headstock, hydraulic pump and coolant pump, to simplify construction and make possible operating conveniences of built-in electrical control system.

Any rate of travel from 7 to 360 inches per minute can be selected while machine is running. Work size capacities are 6 x 18 inches for the No. 10 machine, and 6 x 30 inches for the No. 12. On both sizes, centers swing 6 11/16 inches over table, and a 24-inch wheel clears work to 4 inches diameter.

Axles Broached With Pull-Down Machine

■ Colonial Broach Co., Detroit, has added to its line a new pull-down broaching machine, designed for small jobs.

One job to which this machine is readily adapted is broaching kingpin holes in front axles. In this operation axle is placed on two plates at top of machine. Broach is inserted from top through hole in the work, then through the face plate into an automatic puller. After the broach has been pulled through the work, axle is removed and machine returns the broach, puller releasing it at the top of its stroke. Coolant flows down naturally through the hole with the broach.

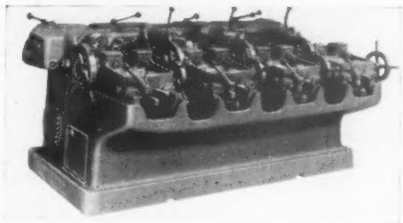
Machine has 5-ton capacity and 18-inch stroke. It is hydraulically operated, and is provided with variable speed control, adjustable through dial on the front of the machine. Maximum broaching speed is 30 feet per minute, with a high-speed return of 60 feet per minute. Control is manual. Machine can be arranged for automatic broaching, eliminating necessity of handling broach.

Machine Has Four Threading Units

■ Landis Machine Co., Waynesboro, Pa., has added to its line a quadruple head threading machine with four threading units assembled on a single bed structure.

This model is particularly adaptable to jobbing and maintenance work, especially in railroad shops, where it may be desirable to set each die head on a separate diameter, thus eliminating necessity of frequently changing chasers.

Machine is equipped with selective



gear box, which provides eight threading speeds. Main spindle is driven by a spiral bevel gear and is mounted on a preloaded antifriction bearing at the die head end. This feature eliminates possibility of wear or end play in spindle. Guides are covered by telescoping steel guards which protect them from chips. Since the center to center measurements of this machine are comparatively short, one man can conveniently operate the four die heads.

Belting Is Oilproof

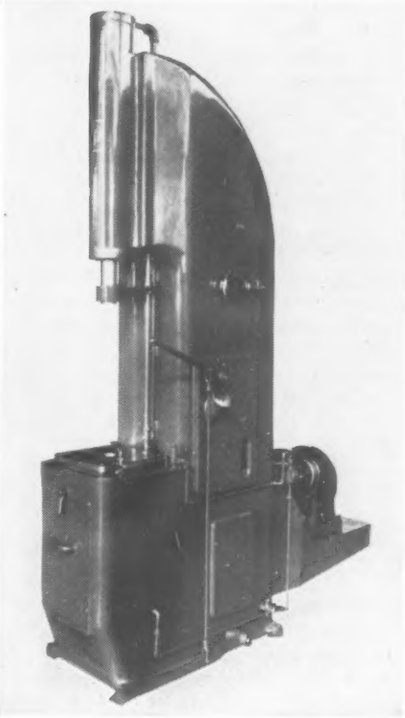
■ Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc., Passaic, N. J., has recently developed transmission belting material which resists the destructive action of mineral oil.

There is no natural rubber in this new belting, which is called Paranite. Material used is synthetic, but can be compounded as rubber. Accumulation of oil on this belting will not cause swelling or deterioration.

Vertical Press Has Removable Top-Plate

■ American Broach & Machine Co., division of Sandstrand Machine Tool Co., Ann Arbor, Mich., has placed on the market a new type V-2 vertical hydraulic press for pressing, broaching and assembly work.

The unit has a work table built

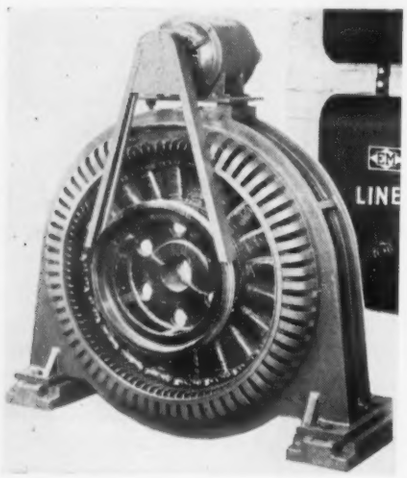


integral with the vertical column, providing a solid construction. Work table is square and equipped with removable steel top plate which is accurately finished on the surface for application of work holding fixtures for internal and external broaching. The hole in the center of the steel table is in alignment with the hydraulic ram.

The ram is hardened and ground, the lower end being threaded and counterbored. The counterbore is ground on the diameter and also on the end so that the broach connecting head and nose pieces can be easily applied.

Equipment Simplifies Industrial Compressors

■ Electric Machinery Manufacturing Co., Minneapolis, has recently developed a new type of equipment to make direct-connected synchronous motors more practical for smaller industrial reciprocating air



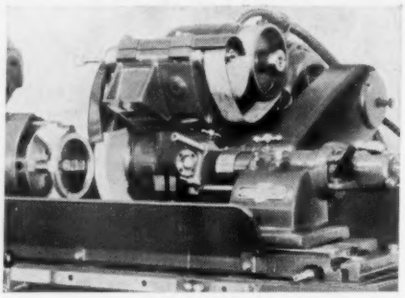
and gas compressors requiring down to 40 horsepower.

Exciter is mounted on top the synchronous motor, V-belt driven from a sheave on the rotor of the motor, eliminating floor space and extra wiring necessary where a separate induction motor generator set is used for excitation. An automatic, enclosed, wall-mounted control is supplied instead of the usual panel-mounted starter, thus simplifying installation and saving space.

Internal Attachment Improves Grinder

■ Cincinnati Milling Machine & Cincinnati Grinders Inc., Cincinnati, has announced development of a new internal grinding attachment for use with Cincinnati 12-inch and 16-inch universal grinding machines.

This attachment is permanently fixed to the machine and is hinged at front of the grinding wheel head



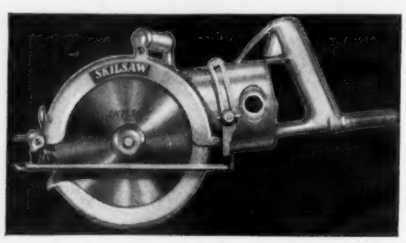
for rapid and accurate setting up. It may be set up by swinging the spindle housing down and tightening one bolt, and it is always in accurate alignment because swivel setting of the wheel head remains the same for both straight external and internal work. The internal attachment is driven by an individual 2-horsepower motor, mounted on a cover plate at the top of wheel head unit. An endless flat belt drives the attachment spindle.

Internal attachment has a capacity ranging from 5/16 to 4-inch diameters, and 1½ to 6½-inch depths of holes, using ¼ and 2-inch diameter wheels, depending upon the spindle. Speeds depend also upon the spindle chosen, varying from 10,000 to 18,000 revolutions per minute.

Electric Handsaw Quickly Adjustable

■ Skilsaw, Inc., 3345 Elston avenue, Chicago, has added to its line an electric handsaw, Model 87, which features greater power, faster cutting speed and better balance than previous models.

Saw has a 9-inch blade, and will cross-cut 3-inch dressed lumber and bevel-cut lumber 2⅜ inches thick at 45 degrees. It has been designed to permit quick adjustment for both depth and bevel cutting. Blade,



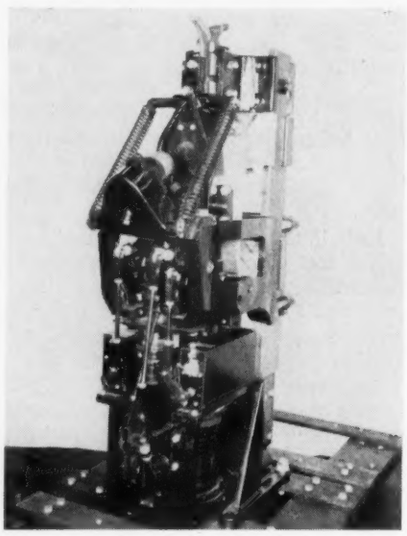
which is protected by an automatic spring-operated telescopic guard, has a free speed of 3600 revolutions per minute as standard, with an optional speed of 5000. Die-cast aluminum alloy frame and handle are designed to give easy operating balance. A blower arrangement, built into the upper guard, keeps line of cut free of sawdust.

This handsaw may be used for cutting wood, metal, stone, tile and compositions.

Air Circuit Breaker Has Foolproof Contacts

■ Westinghouse Electric & Mfg. Co., Pittsburgh, has introduced a new heavy duty, direct current, air circuit breaker of a durable construction designed to provide a maximum of trouble free service in industrial setups.

Its contacts represent a wide departure from previous practice in circuit breakers of this type. No carbon is used, and the main and auxiliary contacts are so arranged that magnetic reaction at high currents increases contact pressure. The main contacts have the stationary portions semiflexible, while the moving contact is solid. Any mag-



netic reaction set up by heavy currents forces the stationary contacts outward against the moving contact thereby maintaining contact pressure until the breaker actually begins to open. The mechanism is mechanically trip free from the closing solenoid or operating handle so that the breaker will open immediately if an attempt is made to close it against an extreme overload or short circuit.

Pulls Any Wheel

■ Edelblute Mfg. Co., Reynoldsville, Pa., has announced a gear and wheel puller of improved design for handling a range of pulling jobs that

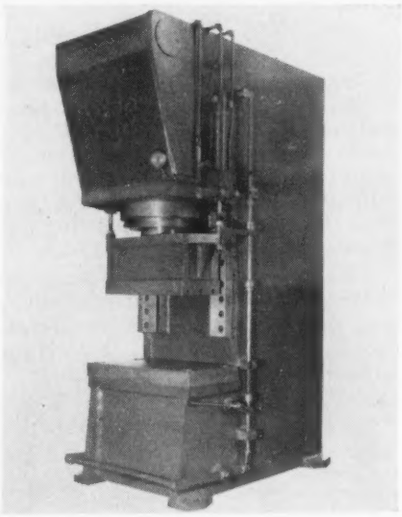
formerly required four to ten types or sizes of other devices.

Double-end chains have grab hooks on one end for spoked wheels and special close-grip hooks on the other end for solid wheels. Puller will take hold of wheels close to end of shaft or far from end, and will pull through or over other wheels.

Hydraulic Press Has Welded Frame

■ Verson Allsteel Press Co., 9308 South Kenwood avenue, Chicago, has announced development of a full line of hydraulic presses for draw work, forging, straightening, forming, flanging and die spotting.

Featured in this line is a 200-ton gap type speed press, with an all-steel one-piece welded frame. It has an 11½-inch main ram and two traversing cylinders. Ram is a steel forging, as is the main cylinder. Maximum working pressure is 3000 pounds. Equipped with a 12-inch stroke, this press has a pressing down speed of 37.6 inches per minute, rapid traverse down of 464 inches per minute and a rapid return of 660 inches per minute. Ram does not come in contact with the cylinder walls at any time.



Gage Tests Stiffness

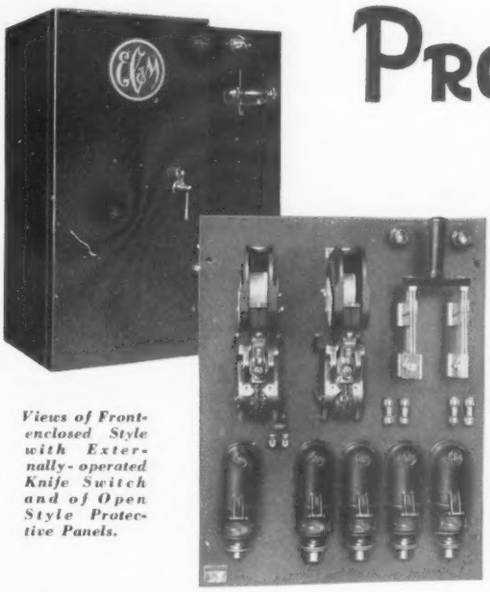
■ Taber Instrument Co., North Tonawanda, N. Y., has placed on the market a stiffness gage, known as the V-5, for the accurate measurement of stiffness and resilient qualities of paper, coated fabrics, light metallic sheet and wire.

It is calibrated in metric units with continuous scale from 0 to 2000 gram centimeters. An important accessory to the gage is a triple-cut shear, which blanks out test specimens accurate to size, insuring against dimensional errors. Both units are light and portable, and gage's simplicity of operation and direct readings make it easy to use.

Gear Finisher Is Economical

■ Michigan Tool Co., 7200 East Six Mile road, Detroit, has announced a new gear finisher, known as the "860," designed for application wherever limitations on production quantities or requirements for finishing wide varieties of gears on one machine do not permit taking full advantage of maximum economies possible with a rack finisher.

This machine is of the single rotary cutter type and operates on the crossed-axis principle. Cutter and gear rotate in mesh but about different axes, so that as they rotate there is a sliding action diagonally across the face of the gear tooth, which shaves off excess material. In operation, gear is loaded



Views of Front-enclosed Style with Externally-operated Knife Switch and of Open Style Protective Panels.

PROTECTIVE PANELS *for* CRANES

These are compact units for protecting the electrical equipment used on overhead, locomotive and similar cranes. They take the place of Knife Switches, Circuit Breakers, Fuses, etc., otherwise necessary and combine all the protective devices in one unit easily installed in the crane cab. The Push Button, which closes the Main Line Contactor (of *LINE-ARC* design) and makes the crane "live", may be self-contained on open type Panels, or when desired, may be mounted in front of the cab, adjacent to the operator.

Important Safety Features of these Panels include emergency stopping of all motors, low voltage protection which prevents accidental starts after voltage failure, provision for padlocking the main line Knife Switch open when it is desired to shut the crane down for repairs or adjustments, and other outstanding advantages.

Bulletin 1021-A gives complete information on open, front-enclosed and completely enclosed style for use on D.C. cranes having from 2 to 8 motors. Similar data is available for A.C. cranes. Mail the convenient coupon below for your copies.

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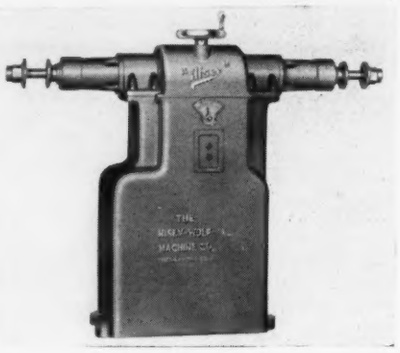
into machine on arbors or between centers. Control button starts rotation of the cutter, driving the gear with it. As cutter revolves, table carrying the cutter is fed away from operator toward rear of the machine until cutter has passed the point where center distances between cutter and gear reach the minimum, when gears are properly sized. At this point, table feed reverses automatically, carrying cutter back through maximum depth of contact with the gear toward front of machine, completing the cycle.

Gear finisher is available in two types, 8-inch and 12-inch, designation referring to maximum gear diameters which may be finished. The machine is driven by a 3-horsepower electric motor.

Buffer Has Wide Speed Variance

■ Hisey-Wolf Machine Co., Cincinnati, has announced a new "infinitely variable speed" buffing and polishing machine.

By turning hand wheel at the top of this machine any desired spindle speed from 1700 to 3500 revolutions per minute can be

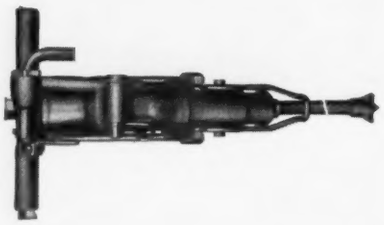


quickly obtained. Speed may be changed while spindle is in motion, or even when machine is under a working load. Eleven seconds is the time required to change speed from extreme low to extreme high, or vice versa. A dial plate on front of machine indicates revolutions per minute of the spindle.

Has More Power Per Pound

■ Ingersoll-Rand Co., Phillipsburg, N. J., has added to its line of jackhammers a lightweight model, the JA-35, designed to handle all general light work and yet provided with sufficient power to do some jobs that ordinarily require heavier machines.

This model combines the design of larger drills with use of new alloys and heat treating methods. Weighing less than 35 pounds, it finds application in coal and metal mines, in



quarries and on construction jobs, and is light enough for cutting hitches, trimming and taking up bottom. It is said this jackhammer does a surprising amount of work per cubic foot of air used.

Crane Operates In Confined Areas

■ Harnischfeger Corp., Milwaukee, has developed a self-supporting pillar jib-crane for work in side bays, low headroom areas and other

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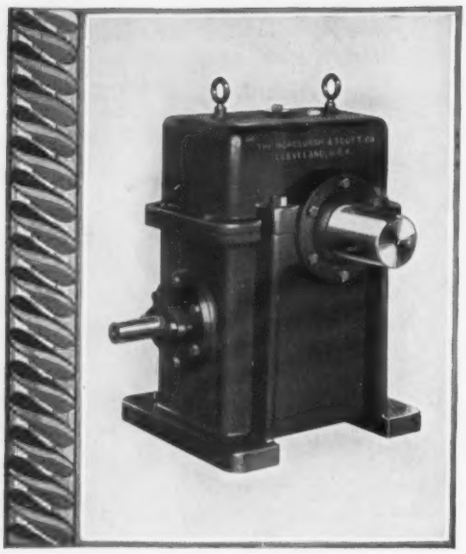

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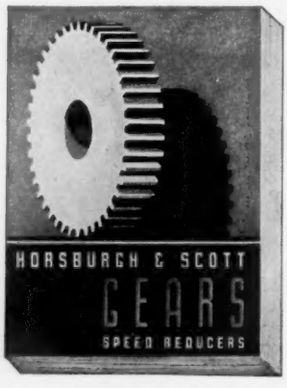

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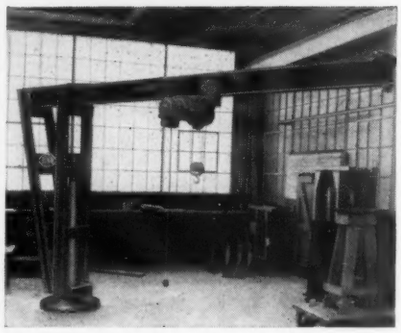
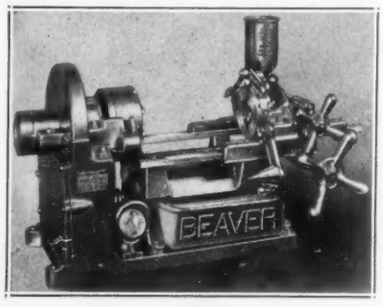


confined areas where overhead traveling crane or hoist service is not available or practical.

Unit is built in capacities up to 5 tons, heights up to 20 feet and to a maximum radius of 20 feet. It is practical for use in machine shops, steel mills, wire mills and all types of production plants where materials are lifted, lowered or moved in process of manufacture. A 2-ton model has been typically used in a steel mill for service in moving ladle from the side bay in an electric furnace operation. Crane is furnished with either pendant rope or pushbutton control, and may be equipped with a newly-presented pushbutton variable speed controller which regulates all lifting, lowering and traveling operations. Installation of crane is accomplished without need of revamping existing supports.

Pipe Machine Is All-Gear Driven

■ Beaver Pipe Tools Inc., Warren, O., has developed a small portable pipe and bolt machine, model-B,



which cuts, threads and reams nine sizes of pipe from ⅛ to 2-inch.

With a drive shaft and geared tools it will cut and thread 2½ to 12-inch pipe. Solid bolt rounds up to 1-inch can be cut off, and 2-inch bolts can be threaded in one cut. This model is all-gear driven and is equipped with a standard all-steel geared chuck and an automatic chuck wrench ejector, a safety feature. It is self-cleaning. Chips and oil fall, by gravity, into removable trays on either side of the machine. A reservoir provides an adequate bath of flowing oil to dies.

Machine is available complete or in units, starting with the power drive, which can be used to operate all makes of hand pipe threaders, cutters and reamers for fabricating pipe from ⅛-inch to 2 inches.

Circuit Breaker Starts Heavy Motors

■ Conduit works of Allis-Chalmers Mfg. Co., Boston, has announced production of an indoor oil circuit breaker, called the type DX-40, designed for heavy duty starting of large synchronous and induction motors.

This circuit breaker is especially recommended for steel mill service, including rolling mill starting and jogging, and is designed to operate thousands of times without requiring attention. A special feature is the use of expulsion ports, which hasten arc extinction. Other features include: large, butt-type arcing contacts; main contacts of wedge and finger type with silver contact surfaces; low inertia,

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straight-line-motion type mechanism; mechanically trip-free manual or electrical operator. The breaker is furnished for 600 and 1200 amperes at 15 kilovolts with an interrupting capacity rating of 100,000 kilovolt-amperes.

Electric Arc Saw Will Cut Any Metal

■ Miller Electric Mfg. Co., Appleton, Wis., has added to its line an electric arc saw that will cut iron, steel and any alloy metal.

Although intended for cross cutting, this unit can be furnished in special models for slotting, turning, arc threading and arc milling. Saw is easy and safe to operate, due to low voltage supplied across the arc. It cuts with equal efficiency, regardless of the hardness or analysis of metal, and without changing temper or destroying metal structure.

Mechanically the sawing unit consists of a soft alloy steel blade, provided with small straight teeth on its circumference and driven at a high speed by an electric motor. Cuts are made by a controlled electric arc that leaps ahead of the saw and brings metal to a plastic condition. Saw blade functions only to sweep molten metal from between kerf lines and as an electrode from which the arc jumps to the work. When cuts are completed, the saw is cool. To generate arc between the saw and the work, a specially built welding transformer is used to provide a current of suitable voltage and amperage to melt the metal to be cut.

Spray Gun Operates At Low Pressures

■ Eclipse Air Brush Co., 390 Park avenue, Newark, N. J., has announced a spray gun, known as the Gat, designed for fast work at low pressures.

This gun is made of heat-treated dowmetal and weighs only 23 ounces complete. It can be operated with either internal or external atomization. Nozzles are available for all purposes and materials, with spray widths varying from 1 to 36 inches. Heavy paint can be sprayed at lower pressures, and favorable results have been obtained with nitrocellulose and synthetic lacquers, as well as with paints, varnishes and enamels.

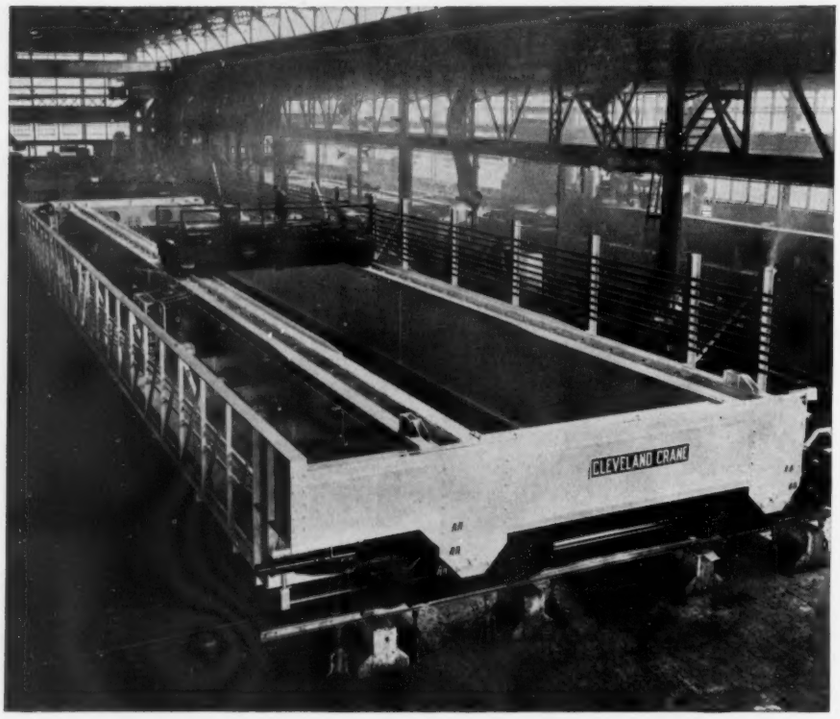
Scoop Truck Welded

■ Barrett-Cravens Co., 3255 West Thirtieth street, Chicago, has placed on the market an all steel, arc welded scoop truck, designed to handle any type of crate, case, box or barrel.

It is constructed so that load is directly on wheels and axle and not on trucker's arms. Width overall is 19¼ inches and height is 53 inches. The 6-inch wheels are equipped with Hyatt bearings.

CLEVELAND CRANES

All Welded for Every Industry



• One Hundred and Twenty Foot Span (120'-0") sixteen foot spread (16'-0") fifteen ton three motor All Welded Cleveland Steel Mill Crane.

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MATERIALS HANDLING EQUIPMENT

Crawler Tractors

(*Concluded from Page* 50)

tained within attachment members and are transferred to the rugged side frames of the tractor. The body of the tractor is not used as a counterbalance for the attachment, therefore, the tractor spring is not depressed to cause abuse to various parts. Side draft is transferred directly to the track frame. Main side frames of the attachment are of rugged box construction and are attached to the tractor on a fixed dead axle ahead of the drive sprocket so that in bulldozing operations shocks or strains are not transmitted to moving axles or tractor driving shaft.

The cutting edge of the blade is reversible; shoes are adjustable and are provided with renewable soles. Installation of the unit is effected without alteration of tractor fenders or drilling of holes in the side frames. Oil tank, valves and pumps are installed on brackets mounted on the rear of the transmission case.

Unloading the last few tons of ore, coal, limestone, fertilizer rock, or similar bulk materials, from a boat was a time-consuming hand labor job until the tractor method was initiated. Up to this time, clean-up was accomplished by putting a crew of men in the hold to shovel into the ore bucket stray material which the bucket could not pick up. This was a slow and laborious procedure. A crawler tractor equipped with a bulldozer attachment speedily removes material from the sides and bulkheads and places it in piles convenient for the ore bucket to handle.

Clean Up Is Speeded

Over 80 per cent of the cleaning can be accomplished with the tractor while the unloading machine is in operation, it is said, because both can work in the same compartment simultaneously. The tractor keeps the ore in piles so that the ore bucket can be filled on each cycle of operation. With use of the tractor, unloading time on some ore boats is reduced 8 to 10 hours. This, of course, represents substantial economy over former practice and soon justifies purchase of the equipment.

Getting tractors into the holds of boats is a simple matter on some docks; on others, some special method must be devised. Whenever possible, the tractor is driven under the ore bucket, attached to the bucket by cables, and lowered into the hold. Removal is accomplished in the same manner. When the pan of the unloader extends out to the boat, a different procedure is required. This situation is met by using a locomotive crane

Fig. 8—Cleaning up with a crawler tractor and bulldozer has shortened the unloading time of ore boats as much as 8 to 10 hours. Formerly this was a hand labor job

to hoist the tractor onto the boat and then to lower it into the hold with the ore bucket. On some docks, on which the tractor is used exclusively for clean-up work, it is stored on the deck of the crane when not in use.

Frequently, a tractor with bulldozer is used to assist in unloading boat cargoes of iron and steel scrap. These cargoes consist of miscellaneous sizes and shapes and are removed by electromagnets operated from cranes on the dock. Crane booms do not always reach the far side of boats and when this condition exists it is necessary to swing the magnets to reach the material. Since crane operators are not able to maintain full control over swinging magnets, damage to boats sometimes results.

Such a situation confronted a large steel company which was utilizing a crawler tractor and bulldozer for miscellaneous plant opera-

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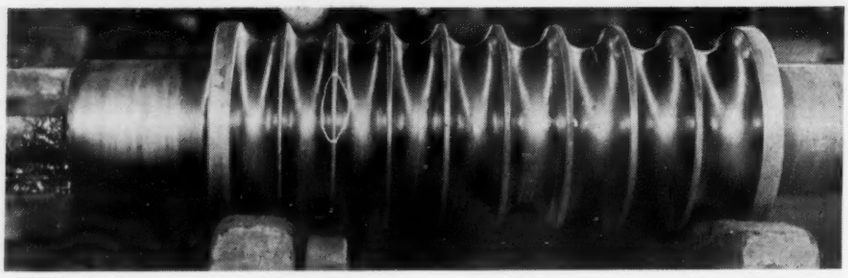
tions. When the cargo of scrap was removed down to the point where the tractor could get traction, it was lowered into the boat and used to keep the scrap under the magnet. This, of course, made it unnecessary to swing the magnet, and prevented damage to the side of the boat.

This steel company originally purchased the tractor to handle coal which in storage had to be placed out of reach of the bridge crane. Confronted with the job of getting the coal into the mill quickly, the plant acquired the tractor with bulldozer. Within 3 hours the coal was moved under the crane and a serious delay was avoided. When the coal moving job was finished, the equipment was used to level the mill yard and roadways.

Mill Rolls Now Can Be Welded

■ RECENTLY, an alloy cast iron roll used for rolling rounds in a 16-inch bar mill had a section of the collar broken out between two of its grooves. Rebuilt by oxyacetylene welding, roll was returned to service with minimum expense and time lost, according to *Oxy-Acetylene Tips*, published by The Linde Air Products Co., New York. The involved roll weighed 2250 pounds and had grooves ranging from 2⅞ to 3⅞ inches in diameter. The damaged collar was between 3 and 3⅛-inch grooves, and the section which had broken out was about 3 inches long and 1 inch deep.



Circular chalk mark indicates section of alloy cast iron roll rebuilt by welding

Supported by Rollers

Roll was removed from mill and supported on its bearing ends by means of rollers, permitting it to be turned easily. A heavy piece of steel was placed under one of the collars near the center of the roll to prevent sagging. A firebrick furnace then was built around the roll with roll necks protruding. Steel plate covers were used.

A charcoal fire was started and the roll preheated slowly, giving it a quarter turn every 5 minutes to assure uniform heating. After heating for 7 hours, roll was just turning from black to a red. Roll was of chromium-nickel cast iron so welding rod of approximately the same composition was used, a layer being deposited and the roll given ¼a quarter turn. Successive turns at 5 minute intervals helped maintain uniform temperatures in the roll. After four layers had been deposited, the broken section was completely rebuilt, requiring about 1½ hours.

Tested With Fire Clay

After welding was finished, the holes in the furnace were luted with fire clay to exclude air and several layers of asbestos were laid on the steel sheets covering the furnace. This held the heat and allowed the roll to cool slowly. A man stayed with the job all night turning it at regular intervals. Roll remained in the furnace to cool over the week end.

Upon removal there were no furnace checks in weld or surrounding metal and no distortion. Hardness tests indicated preheating had apparently softened the roll a little but not enough to effect its operation. After machining, rebuilt roll was returned to service and has stood up satisfactorily.

Diesel Switchers

■ **Two Caterpillar diesels in Whitcomb locomotives are used here in spotting, switching, and hauling from 7 to 12 cars of scrap iron. Each car holds four charging boxes. Craneways are seen extending out from open end of building in upper left and along one side of coal storage area at extreme right**

Will Introduce New Speed Transmission Soon

■ Joseph S. Pecker, mechanical engineer, Victory building, Philadephia, announces he will shortly introduce a new variable speed transmission developed by Szwekely Co. Inc. Of the infinitely variable type, it is being designed to operate machine tools where an infinite number of speeds for various cutters and work may be required.

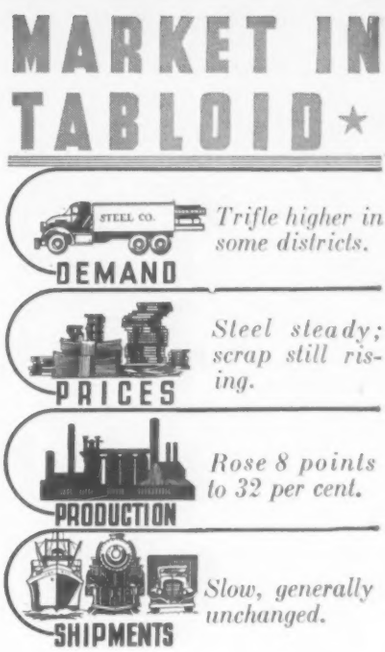
Removes Hand Operation

■ Pyro-Electro Instrument Co., 7323 West Chicago boulevard, Detroit, has introduced a machine which eliminates hand operation in testing for hardness. The unit can accurately test hardness in any standard scale with instantaneous readings and can be supplied with automatic features to operate up to speeds of 2000 per hour.

ADVERTISING PAGES REMOVED

Buying Slow to Respond To Lower Steel Prices

Groundwork Believed Laid For Future Improvement



■ STEEL demand has responded only feebly to recent price reductions, and while buying is slightly heavier in some districts, the low rate of steel consumption in many industries is a restrictive factor which lower quotations have been unable to offset immediately.

Sentiment has improved decidedly the past 30 days, however, and a more hopeful view is taken of the future. At best, only slight recovery in business is looked for this month, due partly to seasonal influences, but producers feel confident that the groundwork has been laid for a gradual but steady betterment during coming weeks.

Confusion resulting from the introduction of new basing points and revised prices on various steel products is clearing, thereby removing much of the uncertainty which recently tended to postpone buying and permitting the release of some tonnages temporarily held from the market.

In the East reports still persist that the price structure will be revised in order to eliminate hardships on certain producers and consumers resulting from the present setup. Rumors indicate some basing points will be eliminated, which, with establishment of new differentials, would result in higher prices to various consumers. Producers give no intimation that such a move is contemplated.

Unlike steel products, pig iron buying has benefited markedly from the $4 reduction in prices of most grades, with heavy coverage of third quarter needs noted in a number of districts. This is in spite of current low schedules among foundries and the absence of improvement in shipments against old contracts. Unconfirmed reports that a price advance is contemplated early in August have helped to stimulate forward bookings of pig iron.

In view of the availability of prompt delivery of most steel products, however, buyers are not inclined to add to inventories and are keeping purchases generally in line with early requirements. Tin plate—not affected by recent price revisions—is being bought sparingly, since consumers feel that a reduction this fall is not unlikely and are interested in holding down stocks.

Influenced principally by shutdowns the week of July 4, steel ingot production last week rose impressively to the best level since April. Almost all districts participated in the rise, boosting output 8 points to 32 per cent. Pittsburgh operations advanced 10 points to 25 per cent, while Chicago schedules were up 8.5 points at 32.5 per cent. Other districts to increase production included Eastern Pennsylvania, up 5.5 points to 27.5 per cent; Buffalo, up 5 points at 35; New England up 2 points at 35; Cincinnati, up 2 points at 38; Cleveland, up 10.5 points at 26; Youngstown, up 3 points at 30; Wheeling, up 2 points at 46. Birmingham was unchanged at 42 per cent, with Detroit holding at 29. St. Louis dropped 15 points to 18.

A buoyant scrap market continues to furnish a bullish note. Consumers are slow to increase their purchases, but prices have risen further in all consuming districts. The steelmaking scrap composite advanced 58 cents last week to $13.08, the highest since the final week of March.

Markets for railroad material and equipment remain dull despite a slight gain in miscellaneous purchases by some roads. The only noteworthy development in equipment is the issuing of releases for material by carbuilders participating in the building of 5550 freight cars for the Southern Railway.

Activity in structural and reinforcing steel is well sustained and shortly will benefit from the federal spending program. Automotive steel buying remains slow, although production is making a better showing for July than was expected 60 days ago when numerous shutdowns were thought in prospect.

Motor car assemblies last week rebounded sharply to 42,010 units, compensating for light schedules during the holiday week when output was only 25,375. Last week's total was the best since late May but far below the level a year ago. General Motors' output rose from 15,175 to 17,900; Chrysler's from 4710 to 6190; Ford's from 1600 to 12,500; other makers turned out 5420 units, up from 3890.

The finished steel price composite holds at $57.20, while the iron and steel composite is down 6 cents to $36.27 on further adjustments.

COMPOSITE MARKET AVERAGES

	July 16	July 9	July 2	One Month Ago June, 1938	Three Months Ago April, 1938	One Year Ago July, 1937	Five Years Ago July, 1933
Iron and Steel	$36.27	$36.33	$36.29	$38.41	$38.61	$40.03	$29.67
Finished Steel	57.20	57.20	57.20	61.55	61.70	61.70	47.20
Steelworks Scrap..	13.08	12.50	12.16	10.89	12.30	18.51	10.66

Iron and Steel Composite:—Pig iron, scrap, billets, sheet bars, wire rods, tin plate, wire, sheets, plates, shapes, bars, black pipe, rails, alloy steel, hot strip, and cast iron pipe at representative centers. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

Finished Material

	July 16 1938	June 1938	April 1938	July 1937
Steel bars, Pittsburgh	2.25c	2.45c	2.45c	2.45c
Steel bars, Chicago	2.25	2.40	2.50	2.50
Steel bars, Philadelphia	2.57	2.47	2.765	2.74
Iron bars, Terre Haute, Ind.	2.15	2.35	2.35	2.35
Shapes, Pittsburgh	2.10	2.25	2.25	2.25
Shapes, Philadelphia	2.215	2.403	2.465	2.455
Shapes, Chicago	2.10	2.25	2.30	2.30
Tank plates, Pittsburgh	2.10	2.25	2.25	2.25
Tank plates, Philadelphia	2.15	2.445	2.445	2.435
Tank plates, Chicago	2.10	2.25	2.30	2.30
Sheets, hot rolled, Pittsburgh	2.15	2.40	2.40	2.40
Sheets, cold-rolled, Pittsburgh	3.20	3.45	3.45	3.55
Sheets, No. 24, galv., Pittsburgh	3.50	3.75	3.80	3.80
Sheets, hot rolled, Chicago	2.15	2.40	2.50	2.50
Sheets, cold-rolled, Chicago	3.20	3.20	3.25	3.25
Sheets, No. 24, galv., Gary	3.50	3.80	3.90	3.90
Bright bess., basic wire, Pitts.	2.60	2.90	2.90	2.90
Tin plate, per base box, Pitts.	$5.35	$5.25	$5.35	$5.35
Wire nails, Pittsburgh	2.45	2.75	2.75	2.75

Semifinished Material

Sheet bars, open-hearth, Youngs.	$34.00	$37.00	$37.00	$37.00
Sheet bars, open-hearth, Pitts.	34.00	37.00	37.00	37.00
Rerolling billets, Pittsburgh	34.00	37.00	37.00	37.00
Wire rods, No. 5 to $\frac{9}{32}$-inch, Pitts.	43.00	47.00	47.00	47.00

Pig Iron

	July 16 1938	June 1938	April 1938	July 1937
Bessemer, del. Pittsburgh	$21.34	$25.34	$25.30	$25.26
Basic, Valley	19.50	23.50	23.50	23.50
Basic, eastern, del., Philadelphia	21.34	24.69	25.34	25.26
No. 2 foundry, Pittsburgh	21.21	25.21	25.21	25.21
No. 2 foundry, Chicago	20.00	24.00	24.00	24.00
Southern No. 2, Birmingham	16.38	20.38	20.38	20.38
Southern No. 2, del. Cincinnati	19.89	23.89	23.89	23.69
No. 2X eastern, del. Philadelphia	22.215	25.465	26.215	26.135
Malleable Valley	20.00	24.00	24.00	24.00
Malleable, Chicago	20.00	24.00	24.00	24.00
Lake Sup., charcoal, del. Chicago	28.34	30.34	30.34	30.34
Gray forge, del Pittsburgh	20.17	24.17	24.17	24.17
Ferromanganese, del. Pittsburgh	97.77	107.77	107.77	107.29

Scrap

Heavy melting steel, Pittsburgh	$14.25	$11.40	$12.70	$19.40
Heavy melt. steel, No. 2, E. Pa.	12.50	9.875	11.55	16.55
Heavy melting steel, Chicago	11.75	10.25	11.45	17.75
Rails for rolling, Chicago	16.75	14.90	15.25	20.30
Railroad steel specialties, Chicago	14.75	13.50	13.75	20.20

Coke

Connellsville, furnace, ovens	$3.75	$3.90	$4.25	$4.50
Connellsville, foundry, ovens	5.00	5.05	5.25	5.30
Chicago, by-product foundry, del.	11.00	11.00	11.00	11.00

STEEL, IRON, RAW MATERIAL, FUEL AND METALS PRICES

Except when otherwise designated, prices are base, f.o.b. cars.

Sheet Steel

Hot Rolled

Pittsburgh	2.15c
Gary	2.15c
Chicago, delivered	2.18c
Cleveland	2.15c
Detroit, del.	2.25c
Buffalo	2.15c
Sparrows Point, Md.	2.15c
New York, del.	2.39c
Philadelphia, del.	2.32c
Granite City, Ill.	2.25c
Middletown	2.15c
Youngstown	2.15c
Pacific Coast points	2.75c
Pittsburgh	3.20c
Gary	3.20c

Galvanized No. 24

Pittsburgh	3.50c
Gary	3.50c
Chicago, delivered	3.53c
Buffalo	3.50c
Sparrows Point, Md.	3.50c
Philadelphia, del.	3.67c
New York, delivered	3.74c
Birmingham	3.50c
Granite City, Ill.	3.60c
Middletown	3.50c
Youngstown	3.50c
Pacific Coast points	4.10c

Tin Mill Black No. 28

Pittsburgh	3.30c
Gary	3.40c
Granite City, Ill.	3.50c

Cold Rolled

Buffalo	3.20c
Cleveland	3.20c
Detroit, delivered	3.30c
Philadelphia, del.	3.52c
New York, del.	3.54c
Granite City, Ill.	3.30c
Middletown	3.20c
Youngstown	3.20c
Pacific Coast points	3.80c

Long Ternes No. 24 Unassorted

Pittsburgh	3.95c
Gary	3.95c

Enameling Sheets

	No. 10	No. 20
Pittsburgh	2.75c	3.35c
Gary	2.75c	3.35c
Granite City, Ill.	2.85c	3.45c
Youngstown	2.75c	3.35c
Cleveland	2.75c	3.35c
Middletown	2.75c	3.35c

Corrosion and Heat-Resistant Alloys

Pittsburgh base, cents per lb.

Chrome-Nickel

	No. 302	No. 304
Bars	24.00	25.00
Plates	27.00	29.00
Sheets	34.00	36.00
Hot strip	21.50	23.50
Cold strip	28.00	30.00

Straight Chromes

	No. 410	No. 430	No. 442	No. 446
Bars	18.50	19.00	22.50	27.50
Plates	21.50	22.00	25.50	30.50
Sheets	26.50	29.00	32.50	36.50
Hot strip	17.00	17.50	23.00	28.00
Cold stp.	22.00	22.50	28.50	36.50

Steel Plate

Pittsburgh	2.10c
New York, del.	2.29c
Philadelphia, del.	2.15c
Boston, delivered	2.42c
Buffalo, delivered	2.33c
Chicago or Gary	2.10c
Cleveland	2.10c
Birmingham	2.10c
Coatesville, base	2.10c
Sparrows Point, base	2.10c
Claymont, Del.	2.10c
Youngstown	2.10c
Gulf ports	2.45c
Pacific Coast points	2.70c

Steel Floor Plates

Chicago	3.35c
Gulf ports	3.70c
Pacific Coast ports	3.95c
Pittsburgh	3.35c

Standard Shapes

Pittsburgh	2.10c
Philadelphia, del.	2.21½c
New York, del.	2.27c
Boston, delivered	2.41c
Bethlehem	2.10c
Chicago	2.10c
Cleveland, del.	2.30c
Buffalo	2.10c
Gulf ports	2.45c
Birmingham	2.10c
St. Louis, del.	2.39c
Pacific Coast points	2.70c

Tin and Terne Plate

Gary base, 10 cents higher

Tin plate, coke (base box) Pittsburgh	$5.35
Mfg. terne plate,	
Pittsburgh	4.65c
Gary	4.75c
Granite City	4.85c

Bars

Soft Steel

(Base, 3 to 25 tons)

Pittsburgh	2.25c
Chicago or Gary	2.25c
Duluth	2.35c
Birmingham	2.25c
Cleveland	2.25c
Buffalo	2.25c
Detroit, delivered	2.35c
Philadelphia, del.	2.57c
Boston, delivered	2.62c
New York, del.	2.59c
Gulf ports	2.60c
Pacific Coast points	2.85c

Rail Steel

To Manufacturing Trade

Pittsburgh	2.10c
Chicago or Gary	2.10c
Detroit, delivered	2.20c
Cleveland	2.10c

Buffalo	2.10c
Birmingham	2.10c
Gulf ports	2.45c

Iron

Terre Haute, Ind.	2.15c
Chicago	2.15c
Philadelphia	2.47c
Pittsburgh, refined	3.50-8.00c

Reinforcing

New billet, straight lengths, quoted by distributors

Pittsburgh	2.05c
Chicago, Gary, Buffalo, Cleve., Birm., Young., Sparrows Pt.	2.05c
Gulf ports	2.40c
Pacific coast ports, f.o.b. car docks	2.50c
Philadelphia, del.	2.22c

Rail steel, straight lengths, quoted by distributors

Pittsburgh	1.90c
Chicago, Buffalo, Cleveland, Birm., Young.	1.90c
Gulf ports	2.25c

Wire Products

Prices apply to mixed carloads, base; less carloads subject to quantity extras.

Pitts.-Cleve.-Chgo., 100 lb. keg	
Standard wire nails	$2.45
Cement coated nails	$2.45

(Per pound)

Polished staples	3.15c
Galv. fence staples	3.40c
Barbed wire, galv.	3.20c
Annealed fence wire	2.95c
Galv. fence wire	3.35c
Woven wire fencing (base C. L. column)	67.00
Single loop bale ties, (base C. L. column)	56.00

To Manufacturing Trade

Base, Pitts.-Cleve.-Chicago

Bright bess., basic wire	2.60c
Galvanized wire	2.65c
Spring wire	3.20c

Worcester, Mass., $2 higher on bright basic and spring wire.

Cut nails, C. L. Pitts. (10% disc. on all extras)	$3.60

Cold-Finished Carbon Bars, Shafting

Pittsburgh	2.70c
Chicago	2.70c
Gary, Ind.	2.70c
Detroit	2.75c
Cleveland	2.70c
Buffalo	2.70c

Subject to quantity deductions and extras.

Alloy Bars (Hot)

(*Base, 3 to 25 tons*)

Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem 2.80c

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.35	3100	0.70
2100	0.75	3200	1.35
2300	1.55	3300	3.80
2500	2.25	3400	3.20

4100 0.15 to 0.25 Mo. 0.55
4600 0.20 to 0.30 Mo. 1.50-2.00 Ni. 1.10
5100 0.80-1.10 Cr. 0.45
5100 Cr. spring flats 0.15
6100 bars 1.20
6100 spring flats 0.85
Cr. N., Van. 1.50
Carbon Van. 0.85
9200 spring flats 0.15
9200 spring rounds, squares 0.40
Electric furnace up 50 cents.

Piling

Pittsburgh	2.40c
Chicago, Buffalo	2.40c
Gulf ports	2.75c

Strip and Hoops

(Base, hot-rolled, 1 to 25 tons; cold-rolled, 3 to 25 tons)

Hot strip to 23⅛-in. Pittsburgh, Chicago, Gary, Cleveland Youngstown, Middletown Birmingham	2.15c
Detroit, del.	2.25c
Philadelphia, del.	2.47c
New York, del.	2.51c
Cooperage hoop, Pittsburgh, Chicago	2.25c
Cold strip, 0.25 carbon and under, Pittsburgh, Cleveland, Youngstown	2.95c
Chicago	3.05c
Detroit, del.	3.05c

Worcester, Mass. $4 higher.

Carbon	Cleve. Pitts.
0.26—0.50	2.95c
0.51—0.75	4.30c
0.76—1.00	6.15c
Over 1.00	8.35c

Worcester, Mass., $4 higher.

Commodity Cold-Rolled Strip

Pitts.-Cleve.-Youngstown	3.10c
Detroit, del.	3.20c
Worcester, Mass.	3.50c

Lamp stock up 10 cents.

Rails, Fastenings

(Gross Tons)

Standard rails, mill	$42.50
Relay rails, Pittsburgh 20—100 lbs.	32.50-35.50
Light rails, billet qual., Pitts., Chicago, B'ham.	$40.00
Do., rerolling quality	42.00
Angle bars, billet, mills	2.80c
Do., axle steel	2.35c
Spikes, R. R. base	3.15c
Track bolts, base	4.35c
Car axles forged, Pitts., Chgo., B'ham.	3.15c
Tie plates, base	$46.00

Base, light rails 25 to 60 lbs.; 20 lbs. up $2; 16 lbs. up $4; 12 lbs. up $8; 8 lbs. up $10. Base railroad spikes 200 kegs or more; base plates 20 tons.

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade as per Dec. 1, 1932, lists, carloads 5% up; full containers additional 10%.

Carriage and Machine

½ x 6 and smaller	65-5-5 off
Do. larger, to 1-in.	60-10-5 off
Do. 1⅛ and larger	60-5-5 off
Tire bolts	50-5 off

Stove Bolts

In packages with nuts attached 70-5 off; in packages with nuts separate 70-10-5 off; in bulk 80-5 off on 15,000 of 3-inch and shorter, or 5000 over 3-inch.

Step bolts	50-10-5-5 off
Elevator bolts	50-10-5-5 off

Plow Bolts

All sizes	65-5-5 off

Nuts

Semifinished hex.; ½-in. and smaller	60-10-5 off
Do., ⅞ to 1-inch	60-5-5 off
Do., over 1-inch	60-5 off

Hexagon Cap Screws

Milled	50-10-5 off
Upset, 1-in. smaller	70-5-5-off

Square Head Set Screws

Upset, 1-in., smaller	80-5-5 off
Headless set screws	75-5 off

Rivets, Washers

Structural, Pittsburgh, Cleveland	3.40c
Structural, Chicago	3.40c
⅞-inch and smaller, Pitts., Chi., Cleve.	65-10 off
Wrought washers, Pitts., Chi., Phila. to jobbers and large nut, bolt mfrs. l.c.l. $5.40; c.l.	$5.75 off
Do., less carloads, 5 kegs or more, no discount on any extras	$3.90
Do., under 5 kegs no disc. on any extras	$4.05

Welded Iron, Steel Pipe

Base discounts on steel pipe. Pitts., Lorain, O., to consumers in carloads. Gary, Ind., 2 points less. Chicago, del. 2½ less. Wrought pipe, Pittsburgh.

Butt Weld

Steel

In.	Blk.	Galv.
⅛	63½	54
¼	66½	58
1—3	68½	60½

Iron

¾	26	8
1—1¼	30	14
1½	34	16½
2	33½	16

Lap Weld

Steel

2	61	52½
2½—3	64	57½
3½—6	66	57½
7 and 8	65	55½
9 and 10	64½	55
11 and 12	63½	54

Iron

2	26½	10
2½—3½	27½	12½
4	29½	16
4½—8	28½	15
9—12	24½	10

Line Pipe

Steel

1 to 3, butt weld	67½
2, lap weld	60
2½ to 3, lap weld	63
3½ to 6, lap weld	65
7 and 8, lap weld	64
10-inch lap weld	63½
12-inch, lap weld	62½

Iron

	Blk.	Galv.
¾ butt weld	25	7
1 and 1¼ butt weld	29	13
1½ butt weld	33	15½
2 butt weld	32½	15
1½ lap weld	23½	7
2 lap weld	25½	9
2½ to 3½ lap weld	26½	11½
4 lap weld	28½	15
4½ to 8 lap weld	27½	14
9 to 12 lap weld	23½	9

Boiler Tubes

Carloads minimum wall seamless steel boiler tubes, cut lengths 4 to 24 feet, f.o.b. Pittsburgh, base price per 100 feet subject to usual extras.

Lap Welded

Sizes	Gage	Steel	Charcoal Iron
1½" O. D.	13	$ 9.72	$23.71
1¾" O. D.	13	11.06	22.93
2" O. D.	13	12.38	19.35
2¼" O. D.	13	13.79	21.68
2¼" O. D.	12	15.16	.....
2½" O. D.	12	16.58	26.57
2¾" O. D.	12	17.54	29.00
3" O. D.	12	18.35	31.36
3½" O. D.	11	23.15	39.81
4" O. D.	10	28.66	49.90
5" O. D.	9	44.25	73.93
6" O. D.	7	68.14	.....

Seamless

Sizes	Gage	Hot Rolled	Cold Drawn
1" O. D.	13	$ 7.82	$ 9.01
1¼" O. D.	13	9.26	10.67
1½" O. D.	13	10.23	11.79
1¾" O. D.	13	11.64	13.42
2" O. D.	13	13.04	15.03
2¼" O. D.	13	14.54	16.76
2¼" O. D.	12	16.01	18.45
2½" O. D.	12	17.54	20.21
2¾" O. D.	12	18.59	21.42
3" O. D.	12	19.50	22.48
3½" O. D.	11	24.62	28.37
4" O. D.	10	30.54	35.20
4½" O. D.	10	37.35	43.04
5" O. D.	9	46.87	54.01
6" O. D.	7	71.96	82.93

Cast Iron Pipe

Class B Pipe—Per Net Ton

6-in., & over, Birm.	$43.00
4-in., Birmingham	46.00
4-in., Chicago	53.80
6 to 24-in., Chicago	50.80
6-in. & over, east fdy.	46.00
Do., 4-in.	49.00

Class A Pipe $3 over Class B
Stnd. fitgs., Birm., base $100.00

Semifinished Steel

Billets and Blooms

Rerolling Quality

4 x 4-inch base; gross ton

Pitts., Chi., Cleve., Buffalo, Young., Birm., Sparrows Point	$34.00
Philadelphia	36.50
Duluth	39.00

Forging Quality Billets

6 x 6 to 9 x 9-in., base

Pitts., Chicago, Buffalo	40.00
Forging, Duluth	42.00

Sheet Bars

Pitts., Cleveland, Young., Sparrows Point, Buffalo, Canton, Chicago	34.00

Slabs

Pitts., Chicago, Cleveland, Youngstown	34.00

Wire Rods

Pitts., Cleveland, Chicago, Bham., No. 5 to ⅜-inch. incl.	43.00
Do., over ⅜ to ⅝-in. incl.	48.00

Worcester up $2; Galveston up $6; Pacific Coast up $9.

Skelp

Pitts., Chi., Young., Buff., Coatesville, Sparrows Pt.	1.90c

Coke

Price Per Net Ton

Beehive Ovens

Connellsville, fur.	$3.75
Connellsville, fdry.	4.75- 5.50
Connell. prem. fdry.	5.75- 6.25
New River fdry.	6.50- 6.75
Wise county fdry.	5.50- 5.75
Wise county fur.	4.50- 4.75

By-Product Foundry

Newark, N. J., del.	10.88-11.35
Chi., ov., outside del.	10.25
Chicago, del	11.00
Milwaukee, ovens	11.00
New England, del.	12.50
St. Louis, del.	11.00-11.50
Birmingham, ovens	7.00
Indianapolis, del.	10.00
Cincinnati, del.	9.75
Cleveland, del.	11.00
Buffalo, del.	10.50
Detroit, del.	11.10
Philadelphia, del.	10.65

Coke By-Products

Spot, gal., frt. all. East of Omaha

Pure and 90% benzol	16.00c
Toluol, two degree	22.00c
Solvent naphtha	26.00c
Industrial xylol	26.00c

Per lb. f.o.b. Frankford and St. Louis

Phenol (200 lb. drums)	16 25c
Do. (450 lbs.)	15.25c

Eastern Plants, per lb.

Naphthalene flakes, balls, bbls. to jobbers	6.75c
Per ton, bulk, f.o.b. oven or port	
Sulphate of ammonia	$29.50

Pig Iron

Delivered prices include switching charges only as noted. No. 2 foundry is 1.75-2.25 sil.; 25c diff. for each 0.25 sil. above 2.25 sil.; 50c diff. below 1.75 sil. Gross tons.

Basing Points:	No. 2 Fdry.	Malleable	Basic	Bessemer
Bethlehem, Pa.	$21.00	$21.50	$20.50	$22.00
Birdsboro, Pa.	21.00	21.50	20.50	22.00
Birmingham, Ala.‡	16.38	.....	15.38	21.00
Buffalo	20.00	20.50	19.00	21.00
Chicago	20.00	20.00	19.50	20.50
Cleveland	20.00	20.00	19.50	20.50
Detroit	20.00	20.00	19.50	20.50
Duluth	20.50	20.50	.....	21.00
Erie, Pa.	20.00	20.50	19.50	21.00
Everett, Mass.	21.75	22.25	21.25	22.75
Granite City, Ill.	20.00	20.00	19.50	20.50
Hamilton, O.	20.00	20.00	19.50	.....
Neville Island, Pa.	20.00	20.00	19.50	20.50
Provo, Utah	18.00	.....	.....	.....
Sharpsville, Pa.	20.00	20.00	19.50	20.50
Sparrow's Point, Md.	21.00	.....	20.50	.....
Swedeland, Pa.	21.00	21.50	20.50	22.00
Toledo, O.	20.00	20.00	19.50	20.50
Youngstown, O.	20.00	20.00	19.50	20.50

‡Subject to 38 cents deduction for 0.70 per cent phosphorus or higher.

Delivered from Basing Points:				
Akron, O., from Cleveland	21.39	21.39	20.89	21.89
Baltimore from Birmingham	21.78	.....	20.66	.....
Boston from Birmingham	21.87	.....	.....	.....
Boston from Everett, Mass.	22.25	22.75	21.75	23.25
Boston from Buffalo	22.25	22.75	21.75	23.25
Brooklyn, N. Y., from Bethlehem	23.50	24.00	.....	.....
Canton, O., from Cleveland	21.39	21.39	20.89	21.89
Chicago from Birmingham	†20.22	.....	.....	.....
Cincinnati from Hamilton, O.	20.44	21.11	20.78	.....
Cincinnati from Birmingham	20.06	.....	19.06	.....
Cleveland from Birmingham	20.32	.....	19.82	.....
Mansfield, O., from Toledo, O.	21.94	21.94	21.44	21.44
Milwaukee from Chicago	21.10	21.10	20.60	21.10
Muskegon, Mich., from Chicago, Toledo or Detroit	23.19	23.19	22.69	23.69
Newark, N. J., from Birmingham	22.15	.....	.....	.....
Newark, N. J., from Bethlehem	22.53	23.03	.....	.....
Philadelphia from Birmingham	21.46	.....	20.96	.....
Philadelphia from Swedeland, Pa.	21.84	22.34	21.34	.....
Pittsburgh district from Neville Island	Neville base, plus 69c, 84c, and $1.24 freight.			
Saginaw, Mich., from Detroit	22.45	22.45	21.95	21.95
St. Louis, northern	21.55	20.55	20.05	.....
St. Louis from Birmingham	†20.12	.....	19.82	.....
St. Paul from Duluth	22.08	22.08	.....	22.58

†Over 0.70 phos.

Low Phos.

Basing Points: Birdsboro and Steelton, Pa., and Standish, N. Y., $25.50, Phil. base, standard and copper bearing, $26.63.

Gray Forge

Valley furnace $19.50
Pitts. dist. fur. 19.50

Charcoal

Lake Superior fur. $25.00
do., del. Chicago 28.34
Lyles, Tenn 23.50

Silvery†

Jackson county, O., base: 6-6.50 per cent $24.50; 6.51-7—$25.00; 7-7.50—$25.50; 7.51-8—$26.00; 8-8.50—$26.50; 8.51-9—$27.00; 9-9.50—$27.50; Buffalo $1.25 higher.

Bessemer Ferrosilicon†

Jackson county, O., base: Prices are the same as for silveries, plus $1 a ton.

†The lower all-rail delivered price from Jackson, O., or Buffalo is quoted with freight allowed.

Manganese differentials in silvery iron and ferrosilicon, 2 to 3%, $1 per ton add. Each unit over 3%, add $1 per ton.

Refractories

Per 1000 f.o.b. Works, Net Prices

Fire Clay Brick

Super Quality

Pa., Mo., Ky. $60.80

First Quality

Pa., Ill., Md., Mo., Ky. 47.50
Alabama, Georgia 47.50
New Jersey 52.50

Second Quality

Pa., Ill., Ky., Md., Mo. 42.75
Georgia, Alabama 34.20
New Jersey 49.00

Ohio

First quality 39.90
Intermediate 36.10
Second quality 31.35

Malleable Bung Brick

All bases $56.05

Silica Brick

Pennsylvania $47.50
Joliet, E. Chicago 56.05
Birmingham, Ala. 47.50

Ladle Brick

(Pa., O., W. Va., Mo.)

Dry press $28.00
Wire cut $26.00

Magnesite

Imported dead - burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags) $45.00
Do. domestic 40.00
Do., f.o.b. Chewelah, Wash., net ton, bulk 22.00
net ton, bags 26.00
Quickset magnesite grains, f.o.b. Chewelah, Wash., net ton, bulk 22.00

Basic Brick

Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.

Chrome brick $47.00
Chem. bonded chrome 47.00
Magnesite brick 67.00
Chem. bonded magnesite 57.00

Fluorspar, 85-5

Washed gravel, duty paid, tide, net ton $23.50-24.00
Washed gravel, f.o.b. Ill., Ky., net ton, carloads, all rail $20, barge $22.00
No. 2 lump 22.00-23.00

Ferroalloy Prices

Ferromanganese, 78-82%, tidewater, duty pd. $92.50
Do., del. Pittsburgh 97.49

Spiegeleisen, 19-21% dom. Palmerton, Pa., spot 28.00
Do., New Orleans 28.00
Do., 26-28%, Palmerton 33.00

Ferrosilicon, 50% freight allowed, c.l. 69.50
Do., ton lot 80.50
Do., 75 per cent 126.00
Spot, $5 a ton higher.

Silicoman., 2½ carbon 97.75
2% carbon 102.75 1%, 112.75
Contract ton price $11 higher; spot $5 over contract.

Ferrotungsten, stand., lb. con. del. cars 1.60-1.65

Ferrovanadium, 35 to 40%, lb., cont. 2.70-2.80

Ferrophosphorus, per ton, c.l., 17-18% Rockdale, Tenn., basis, 18%, $3 unitage, 58.50; electrolytic, per ton, c. l., 23-26% f.o.b. Monsanto, Tenn., 24% $3 unitage 75.00

Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. del. carlots 10.50c
Do., ton lots 11.25c
Do., less-ton lots 11.50c

67-72% carloads, 2% carbon, per lb. contained chrome 16.50c
Do., ton lots 17.25c
Do., less-ton lots 17.50c

	Carloads	Ton lots	Less ton
2% carb.	16.50c	17.25c	17.50c
1% carb.	17.50c	18.25c	18.50c
0.10% carb.	18.50c	19.25c	19.50c
0.20% carb.	19.50c	20.25c	20.50c

Spot ¼c higher

Ferromolybdenum, 55-65% molyb. cont., f.o.b. mill, lb. 0.95

Calcium molybdate, lb. molyb. cont., f.o.b. mill 0.80

Ferrotitanium, 40%, lb. con. ti., ton lots $1.23
Do, less-ton lots 1.25
20-25% carbon, 0.10 max., ton lots, lb. 1.35
Do, less-ton lots 1.40
Spot 5c higher

Ferrocolumbium, 50-55%, contract, lb. con. col., f.o.b. Niagara Falls $2.25
Do, less-ton lots 2.30
Spot is 10c higher

Technical molybdenum trioxide, 53 to 60% molybdenum, lb. molyb. cont., f.o.b. mill 0.80

Ferro-carbon-titanium, 15-18%, ti., 6-8% carb., carlots, contr., net ton $142.50
Do, spot 145.00
Do, contract, ton lots 145.00
Do, spot, ton lots 150.00

15-18% ti., 3-5% carbon, carlots, contr., net ton 157.50
Do, spot 160.00
Do, contract, ton lots 160.00
Do, spot, ton lots 165.00

Alsifer, contract carlots, f.o.b. Niagara Falls, lb. 7.50c
Do, ton lots 8.00c
Do, less-ton lots 8.50c
Spot ¼c lb. higher

Chromium Briquets, contract carloads, freight allowed, lb. 7.25c
Do, spot carlots, bulk 7.50c
Do, ton lots 8.00c
Do, less-ton lots 8.50c

Tungsten Metal Powder, according to grade, spot shipment, 200-lb. drum lots, lb. $2.80
Do, smaller lots 3.00-3.10

Vanadium Pentoxide, contract, lb. contained $1.10
Do, spot 1.15

Chromium Metal, 98% cr., 0.50 carbon max., contract, lb. con. chrome 80.00c
Do, spot 85.00c
88% chrome, contract 79.00c
Do, spot 84.00c

Silicon Metal, 1% iron, contract, lb. 14.50c
Do, 2% 13.00c
Spot ¼c higher

Silicon Briquets, contract, carloads, freight allowed, ton $69.50
Carload, spot 74.50
Less-ton lots, lb. 3.75c

Manganese Briquets, contract carloads, freight allowed lb. 4.75c
Ton lots 5.25c
Less-ton lots 5.50c
Spot ¼c higher

Zirconium Alloy, 12-15%, carloads, gross ton $97.50
Do, spot 102.50
34-40%, contract, carloads, lb., alloy 14.00c
Do, ton lots 15.00c
Do, less-ton lots 16.00c
Spot ¼c higher

Molybdenum Powder, 99%, f.o.b. York, Pa., 200-lb. kegs, lb. $2.60
Do, 100-200 lb. lots 2.75
Do, under 100-lb. lots 3.00

WAREHOUSE STEEL PRICES

Base Prices in Cents Per Pound, Delivered Locally, Subject to Prevailing Differentials

	Soft Bars	Bands	Hoops	Plates ¼-in. & Over	Structural Shapes	Floor Plates	Sheets: Hot Rolled	Sheets: Cold Rolled	Sheets: Galv. No. 24
Boston	3.98	4.21	5.21	3.85	3.85	5.66	3.86	4.93	4.76
New York (Metropolitan)	3.94	4.11	4.11	3.76	3.75	5.56	3.73	4.90	4.40
Philadelphia	3.85	3.85	4.35	3.65	3.65	5.25	3.65	....	4.50
Baltimore	3.80	3.95	4.35	3.65	3.65	5.00	3.70	5.05	4.30
Norfolk, Va.	4.20	4.40	4.65	4.10	4.10	5.70	4.15	....	5.40
Buffalo	3.60	3.97	3.97	3.77	3.55	5.40	3.50	....	4.40
Pittsburgh	3.60	3.75	3.75	3.55	3.55	5.15	3.50	....	4.50
Cleveland	3.50	3.65	3.65	3.55	3.73	5.33	3.50	4.70	4.68
Detroit	3.68	3.83	3.83	3.75	3.80	5.42	3.58	4.65	4.74
Cincinnati	3.85	4.00	4.00	3.80	3.83	5.43	3.75	....	4.78
Chicago	3.85	4.10	4.10	3.75	3.75	5.35	3.85	....	5.25
Minneapolis	3.85	4.00	4.00	3.80	3.80	5.40	3.75	5.10	4.75
Milwaukee	3.73	3.88	3.88	3.68	3.68	5.28	3.63	4.58	4.63
St. Louis	3.85	4.22	4.22	4.02	3.82	5.12	3.87	....	4.82
Kansas City	4.15	4.40	4.40	4.10	4.10	5.70	4.10	....	4.75
Memphis	4.01	4.16	4.16	3.96	3.96	5.71	3.91	....	5.26
Chattanooga	3.90	4.05	4.05	3.85	3.85	5.80	3.80	....	4.40
Tulsa, Okla.	4.64	4.79	4.79	4.59	4.59	6.19	4.54	....	5.54
Birmingham, Ala.	3.50	3.65	3.65	3.45	3.45	5.83	3.40	....	4.75
New Orleans	4.10	4.65	4.65	4.00	4.00	5.95	4.25	....	5.15
Houston, Tex.	3.50	5.85	6.25	4.05	4.05	5.65	4.20	....	5.25
Seattle	4.45	4.50	5.85	4.15	4.15	5.90	4.30	....	5.60
Portland, Oreg.	4.30	4.70	6.10	4.15	4.15	5.90	4.30	6.50	5.25
Los Angeles	4.00	4.50	6.35	4.00	4.00	6.20	4.20	....	5.05
San Francisco	4.05	4.45	6.00	3.95	3.95	5.45	4.10	6.40	5.25

	Cold Rolled Strip	Cold Finished Bars	SAE Hot-rolled Bars (Unannealed): 1035-1050	2300 Series	3100 Series	4100 Series	6100 Series	SAE Cold Drawn Bars: 2300	3100
Boston	3.61	4.43	4.28	7.65	6.25	6.00	8.05	8.73	7.33
New York	3.66	4.39	4.14	7.50	6.10	5.85	9.25	8.69	7.29
Philadelphia	3.66	4.36	4.10	7.46	6.06	5.81	8.71	....	....
Baltimore	....	4.35	3.95	..	....	....	....	....	....
Norfolk, Va.	....	4.60	...	....	....	....	....	....	..
Buffalo	3.57	4.05	3.80	7.25	5.85	5.60	8.65	8.25	6.85
Pittsburgh	....	3.95	3.75	7.35	5.95	8.20	8.75	8.35	6.95
Cleveland	3.35	4.05	3.70	7.45	6.05	6.05	7.85	8.25	6.85
Detroit	3.55	4.10	3.83	7.57	6.17	5.92	7.39	8.55	7.15
Cincinnati	3.60	4.30	3.90	7.59	6.19	5.94	8.99	8.60	7.20
Chicago	3.91	4.30	4.05	7.60	6.15	5.90	8.00	8.60	7.15
Minneapolis	....	4.58	4.00	7.60	6.20	8.73	9.28	8.88	7.48
Milwaukee	....	4.18	3.93	7.48	6.08	5.83	7.88	8.48	7.08
St. Louis	3.82	4.22	4.07	7.72	6.27	6.01	8.12	8.56	7.27
Kansas City	4.46	4.85	....	....	....	....	....	....	.
Memphis	....	4.61	....	....	....	....	....	....	....
Chattanooga	....	4.90	.	....	....	....	....	....	....
Tulsa, Okla.	....	5.09	....	....	....	....	....	....	....
Birmingham, Ala.	....	4.98	....	....	....	....	....	....	....
New Orleans	5.00	5.10	...	....	....	....	....	....	....
Seattle	....	5.60	5.80	....	8.00	8.00	8.65	....	....
Portland, Oreg.	....	5.60	6.10	9.00	8.00	7.85	8.70	....	....
Los Angeles	5.96	6.85	4.65	9.40	8.55	8.40	9.05	10.40	9.55
San Francisco	9.30	6.55	5.20	9.65	8.80	8.65	9.30	10.65	9.60

CURRENT IRON AND STEEL PRICES OF EUROPE

Dollars at Rates of Exchange, July 14

Export Prices f. o. b. Port of Dispatch—

By Cable or Radio

	British gross tons U. K. ports £ s d	Continental North Sea ports, gross tons: Quoted in dollars at current value	**Quoted in gold pounds sterling £ s d
Foundry, 2.50-3.00 Si.	$27.17 5 10 0	$15.77	1 19 0
Basic bessemer	....	17.99	2 4 6
Hematite, Phos. .03-.05	32.11 6 10 0*	.....	.....
Billets	$38.90 7 17 6	$34.36	4 5 0
Wire rods, No. 5 gage	55.70 11 5 6	41.43	5 2 6
Standard rails	$50.02 10 2 6	$46.48	5 15 0
Merchant bars	2.43c 11 0 0	1.93c	5 5 0
Structural shapes	2.35c 10 12 6	1.78c	4 17 6
Plates, †¼ in. or 5 mm.	2.56c 11 11 3	2.24c	6 2 6
Sheets, black, 24 gage or 0.5 mm.	2.87c 13 0 0	2.66c	7 5 0°
Sheets, gal., 24 ga., corr.	3.70c 16 15 0	3.20c	8 15 0
Bands and strips	2.93c 13 5 0	2.01c	5 10 0
Plain wire, base	4.31c 19 10 0	2.24c to 2.66c	6 2 6 to 7 5 0
Galvanized wire, base	5.14c 23 5 0	2.87c to 2.97c	7 17 6 to 8 2 6
Wire nails, base	4.09c 18 10 0	2.56c to 2.74c	7 0 0 to 7 10 0
Tin plate, box 108 lbs.	$ 5.00 1 0 3	.....	.....

British ferromanganese $102.50 delivered Atlantic seaboard duty-paid.

Domestic Prices at Works or Furnace—

Last Reported

	£ s d	French Francs		Belgian Francs		Reich Mark
Fdy. pig iron, Si. 2.5	$26.92 5 9 0(a)	$16.62	598	$14.92	440	$25.32 63
Basic bess. pig iron	24.70 5 0 0(a)	.....	...	.....	...	27.94 (b)69.50
Furnace coke	7.41 1 10 0	5.70	205	7.29	215	7.64 19
Billets	38.90 7 17 6	23.35	840	29.15	860	38.79 96.50
Standard rails	2.24c 10 2 6	1.50c	1,150	2.06c	1,375	2.38c 132
Merchant bars	2.70c 12 4 0††	1.40c	1,080	1.65c	1,100	1.98c 110
Structural shapes	2.44c 11 0 6††	1.37c	1,055	1.65c	1,100	1.93c 107
Plates, †¼-in. or 5 mm.	2.59c 11 14 3††	1.76c	1,350	2.06c	1,375	2.29c 127
Sheets, black	3.48c 15 15 0§	1.30c‡	1,600‡	2.36c	1,575‡	2.59c 144‡
Sheets, galv., corr., 24 ga. or 0.5 mm	4.09c 18 10 0	2.93c	2,250	4.13c	2,750	6.66c 370
Plain wire	4.31c 19 10 0	2.16c	1,660	2.48c	1,650	3.11c 173
Bands and strips	2.86c 12 19 0††	1.57c	1,210	1.95c	1,300	2.29c 127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continent usually for basic-bessemer steel. (a) del. Middlesbrough. 5s rebate to approved customers. (b) hematite. °Close annealed ††Rebate of 15s on certain conditions.

**Gold pound sterling carries a premium of 66 per cent over paper sterling.

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated; † indicates brokers prices

HEAVY MELTING STEEL

Birmingham, No. 1.	12.00
Bos. dock No. 1 exp.	11.00-11.25
New Eng. del. No. 1	10.50-11.00
Buffalo, No. 1	12.50-13.00
Chicago, No. 1	11.50-12.00
Chicago, auto, no alloy	10.00-10.50
Chicago, No. 2 auto	9.00- 9.50
Cincinnati, dealers	9.00- 9.50
Cleveland, No. 1	11.50-12.00
Cleveland, No. 2	10.50-11.00
Detroit, No. 1	8.00- 8.50
Eastern Pa., No. 1	13.50-14.00
Eastern Pa., No. 2	12.50
Federal, Ill.	10.00-10.50
Granite City, R. R.	10.00-10.50
Granite City, No. 2	9.00- 9.50
Los Angeles, No. 1	11.50-12.00
Los Angeles, No. 2	10.00-10.50
New York, No. 1	†10.00-10.50
N. Y. dock No. 1 exp.	†11.00
Pitts., No. 1 (R. R.)	15.00-15.50
Pittsburgh, No. 1	14.00-14.50
Pittsburgh, No. 2	12.00-12.50
St. Louis, R. R.	10.50-11.00
St. Louis, No. 2	9.00- 9.50
San Francisco, No. 1	12.00
Seattle, No. 1	10.00-12.00
Toronto, dlrs. No. 1	8.00
Valleys, No. 1	12.00-12.50

COMPRESSED SHEETS

Buffalo	10.50-11.00
Chicago, factory	10.50-11.00
Chicago, dealer	9.50-10.00
Cleveland	11.00-11.50
Detroit	9.50-10.00
E. Pa., new mat.	13.50-14.00
E. Pa., old mat.	9.50-10.00
Los Angeles	12.50-13.00
Pittsburgh	14.00-14.50
St. Louis	5.50- 6.00
Valleys	11.50-12.00
Cincinnati, del	8.50- 9.00

BUNDLED SHEETS

Buffalo, No. 1	9.50-10.00
Buffalo, No. 2	9.50-10.00
Cleveland	7.00- 7.50
Los Angeles	11.00-11.50
Pittsburgh	12.00-12.50
St. Louis	4.75- 5.25
Toronto, dealers	5.00

SHEET CLIPPINGS, LOOSE

Chicago	5.25- 5.75
Cincinnati, dealers	4.50- 5.00
Detroit	6.50- 7.00
†Los Angeles	3.75- 4.00
St. Louis	3.75- 4.00

BUSHELING

Buffalo, No. 1	10.50-11.00
Chicago, No. 1	10.00-10.50
Cincin., No. 1, deal.	6.50- 7.00
Cincinnati, No. 2	2.75- 3.25
Cleveland, No. 2	5.75- 6.25
Detroit, No. 1, new	8.00- 8.50
Valleys, new, No. 1	10.00-10.50
Toronto, dealers	5.00

MACHINE TURNINGS (Long)

Birmingham	6.00- 7.00
Buffalo	6.50- 7.00
Chicago	5.50- 6.00
Cincinnati, dealers	3.25- 3.75
Cleveland	4.75- 5.25
Detroit	4.00- 4.50
Eastern Pa.	7.50- 8.00
Los Angeles	4.00- 4.25
New York	†2.50- 3.00
Pittsburgh	7.75- 8.25
St. Louis	1.50- 2.00
Toronto, dealers	5.00
Valleys	7.00- 7.50

SHOVELING TURNINGS

Buffalo	8.00- 8.50
Cleveland	5.00- 5.50
Chicago	6.00- 6.50
Detroit	6.50- 7.00
Pittsburgh	7.25- 8.25

BORINGS AND TURNINGS

For Blast Furnace Use

Boston district	1.25
Buffalo	6.50- 7.00
Cincinnati, dealers	2.50- 3.00
Cleveland	5.75- 6.25
Eastern Pa.	6.00- 6.50
Detroit	5.50- 6.00
New York	†2.00- 2.50
Pittsburgh	7.00- 7.50
Toronto, dealers	5.50

AXLE TURNINGS

Boston district	†7.50
Buffalo	9.50-10.00
Chicago, elec. fur.	10.00-10.50
Eastern Pa.	9.50 10.00
St. Louis	8.00- 8.50
Toronto	6.00

CAST IRON BORINGS

Birmingham	6.00- 6.50
Boston dist. chem.	†5.00
Bos. dist. for mills	†6.00
Buffalo	6.50- 7.00
Chicago	5.00- 5.50
Cincinnati, dealers	2.50- 3.00
Cleveland	5.75- 6.25
Detroit	5.50- 6.00
E. Pa., chemical	10.00-11.00
New York	†3.00- 3.50
St. Louis	1.50- 2.00
Toronto, dealers	5.50

RAILROAD SPECIALTIES

Chicago	14.50-15.00

ANGLE BARS—STEEL

Chicago	13.00-13.50
St. Louis	10.50-11.00

SPRINGS

Buffalo	16.00-16.50
Chicago, coil	14.50-15.00
Chicago, leaf	13.50-14.00
Eastern Pa.	16.50-17.00
Pittsburgh	16.00-16.50
St. Louis	12.50-13.00

STEEL RAILS, SHORT

Birmingham	14.00
Buffalo	17.00-17.50
Chicago (3 ft.)	14.00-14.50
Chicago (2 ft.)	14.50-15.00
Cincinnati, dealers	16.25-16.75
Detroit	14.00-14.50
Los Angeles	15.00-17.50
Pitts., 3 ft. and less	16.00-16.50
St. Louis, 2 ft. & less	13.00-13.50

STEEL RAILS, SCRAP

Boston district	†9.50
Buffalo	16.00-16.50
Chicago	11.50-12.00
Cleveland	15.00-16.00
Pittsburgh	15.50-16.00
St. Louis	10.50-11.00
Seattle	16.00

FROGS, SWITCHES

Chicago	11.50-12.00
St. Louis, cut	10.50-11.00

ARCH BARS, TRANSOMS

St. Louis	11.25-11.75

PIPE AND FLUES

Cincinnati, dealers	5.50- 6.00
Chicago, net	7.50- 8.00

RAILROAD GRATE BARS

Buffalo	10.00-10.50
Chicago, net	7.00- 7.50
Cincinnati, dealers	6.00- 6.50
Eastern Pa.	12.00-12.50
New York	†8.00- 8.50
St. Louis	7.00- 7.50

RAILROAD WROUGHT

Birmingham	11.00-11.50
Boston district	†9.00- 9.50
Chicago, No. 1 net	8.00- 8.50
Eastern Pa., No. 1	14.00-14.50
St. Louis, No. 1	8.00- 8.50
St. Louis, No. 2	9.75-10.25
Toronto, No. 1 dlr.	14.00

FORGE FLASHINGS

Boston district	†6.25
Buffalo	10.50-11.00
Cleveland	8.50- 9.00
Detroit	7.25- 7.75
Los Angeles	9.00
Pittsburgh	12.00-12.50

FORGE SCRAP

Boston district	†6.25
Chicago, heavy	14.50-15.00

LOW PHOSPHORUS

Buffalo, crops	16.50-17.00
Cleveland, crops	16.00-16.50
Eastern Pa., crops	16.50-17.00
Pittsburgh, crops	17.00-17.50

LOW PHOS. PUNCHINGS

Buffalo	15.50-16.00
Chicago	14.00-14.50
Eastern Pa.	17.00-17.50
Pitts. (light & hvy.)	14.50-15.00
Seattle	15.00

RAILS FOR ROLLING

5 feet and over

Birmingham	16.00-17.00
Boston	†9.50
Chicago	16.50-17.00
New York	†13.50-14.00
Eastern Pa.	16.00-16.50
St. Louis	13.25-13.75

STEEL CAR AXLES

Birmingham	16.00-17.00
Buffalo	16.50-17.00
Boston district	†14.00
Chicago, net	16.50-17.00
Eastern Pa.	21.50-22.50
St. Louis	15.00-15.50

LOCOMOTIVE TIRES

Chicago (cut)	14.00-14.50
St. Louis, No. 1	12.00-12.50

SHAFTING

Boston district	†14.00
New York	†15.00
Eastern Pa.	19.00-19.50
St. Louis	13.00-13.50

CAR WHEELS

Birmingham	11.00-15.00
Boston dist., iron	†10.00
Buffalo, steel	16.50-17.00
Chicago, iron	12.50-13.00
Chicago, rolled steel	14.50-15.00
Cincin., iron, deal.	14.00-14.50
Eastern Pa., iron	15.50
Eastern Pa., steel	16.50-17.00
Pittsburgh, iron	14.50-15.00
Pittsburgh, steel	16.00-16.50
St. Louis, iron	11.00-11.50
St. Louis, steel	12.25-12.75

NO. 1 CAST SCRAP

Birmingham	13.00-13.50
Boston, No. 1 mach.	†11.00
N. Eng. del. No. 2	10.00-10.50
N. Eng. del. textile	12.50-13.00
Buffalo, cupola	13.50-14.00
Buffalo, mach.	15.00-15.50
Chicago, agri. net	10.00-10.50
Chicago, auto net	11.50-12.00
Chicago, railr'd net	9.50-10.00
Chicago, mach. net	11.00-11.50
Cincin., mach. deal.	10.75-11.25
Cleveland, mach. net	15.00-16.00
Eastern Pa., cupola	15.50-16.00
E. Pa., mixed yard	13.50
Los Angeles, net	13.50-14.00
Pittsburgh, cupola	14.50-15.00
San Francisco, del.	13.50-14.00
Seattle	10.00-12.00
St. Louis, cupola	9.50-10.00
St. L., No. 1, mach.	12.00-12.50
St. Louis, agr. mach,	11.25-11.75
Toronto, No. 1, mach., net	10.50

HEAVY CAST

Boston dist. break.	†9.50
New England, del.	10.50-11.00
Buffalo, break.	11.00-11.50
Cleveland, break. net	13.00-13.50
Detroit, break.	9.00- 9.50
Detroit, auto net	11.00-11.50
Eastern Pa.	14.50
Los Ang., auto, net	13.00-14.00
New York, break	†10.00-10.50
Pittsburgh, break	12.50-13.00

STOVE PLATE

Birmingham	8.00- 8.50
Boston district	†7.50- 8.00
Buffalo	12.00-12.50
Chicago, net	8.00- 8.50
Cincinnati, dealers	5.75- 6.25
Detroit, net	8.50- 9.00
Eastern Pa.	12.50-13.00
New York, fdry.	†8.00
St. Louis	6.75- 7.25
Toronto, dealers, net	7.00

MALLEABLE

Birmingham, R. R.	12.50-13.50
New England, del.	13.00
Buffalo	13.50-14.00
Chicago, R. R.	13.50-14.00
Cincin., agri. deal.	10.25-10.75
Cleveland, rail	13.25-13.75
Eastern Pa., R. R.	15.00-15.50
Los Angeles	17.50-18.00
Pittsburgh, rail	14.00-14.50
St. Louis, R. R.	10.00-10.50

Iron Ore

Lake Superior Ore

Gross ton, 51½ % Lower Lake Ports

Old range bessemer	$5.25
Mesabi nonbess.	4.95
High phosphorus	4.85
Mesabi bessemer	5.10
Old range nonbess.	5.10

Eastern Local Ore

Cents, unit, del. E. Pa.

Foundry and basic 56.63% con.	9.00-10.00
Cop.-free low phos. 58-60%	nominal

Foreign Ore

Cents per unit, f.a.s. Atlantic

Foreign manganiferous ore, 45.55% iron, 6-10% man. nom.	12.00-13.00
No. Afr. low phos.	nominal
Swedish low phos.	17.00-18.00
Spanish No. Africa basic, 50 to 60% nom.	12.00
Tungsten, sh. ton. unit, duty pd. nom.	$18.00-19.00
N. F., fdy., 55%	7.00
Chrome ore, 48% gross ton, c.i.f.	$24.50-25.50
Molybdenum ores sulphide, per lb. molybdenum contained, f.o.b. mill	0.75

Manganese Ore

Prices not including duty, cents per unit cargo lots.

Caucasian, 50-52%	nom. 45.00
So. African, 50-52% nom.	45.00
Indian, 50-52%	Nominal

—The Market Week—

Sheets

Sheet Prices, Page 82

Pittsburgh — Sheet production is regaining the ground lost during the holiday week, while orders also are slightly better as the price situation becomes clarified. Sheet orders still are small and little tonnage has been placed for 1939 automotive models. The Pittsburgh market on zinc-coated hot-dipped heat-treated sheets, generally known as galvannealed sheets, has been reduced $6 a ton to 4.25c.

Cleveland — Sheet specifications are limited to small lots for prompt delivery and disclose little of the general improvement sellers hoped would develop from lower prices. Consumers see little occasion to buy beyond early needs in view of availability of prompt delivery by mills. While total bookings so far this month have fallen behind the June period, a moderate upturn early in August is confidently expected.

Boston—Sheet buying lags behind the rate preceding price reductions, one seller reporting orders so far this month only one-half those of the June period. While a few tackmakers are slightly busier, reflecting some pickup in the shoe industry, heavy stocks taken early this year still are being reduced. Youngstown Sheet & Tube Co. has been awarded 135 tons, hot-rolled annealed and pickled sheets for 1939 Rhode Island license plates.

New York—Sheet demand is up slightly. With the price situation clarifying, inquiries are less numerous but orders are a trifle heavier, despite absence of important jobber buying and purchasing by some of the larger consumers who still are well stocked with finished goods. Stainless steel sheets are relatively more active than commoner grades, due more to a broadening of existing uses than to new applications.

Philadelphia — Releases for stampings are heavier, apparently in anticipation of better fall business, and is reflected in more activity in some sheet grades. One mill, for example, is operating its sheet department two weeks on an accumulation of miscellaneous orders. Normally large outlets, including the automotive and radio industries, are accounting for comparatively little tonnage. The Philco plant still is closed by strike, but it is reported sets are being assembled outside Philadelphia.

Cincinnati—Newport Rolling Mill Co., Newport, Ky., has adjusted its quotations on hot and cold-rolled and galvanized sheets, enameling iron and hot-rolled strip to a Middletown

FUEL COSTS CUT!
HEATING-UP TIME REDUCED!
OUTPUT INCREASED!
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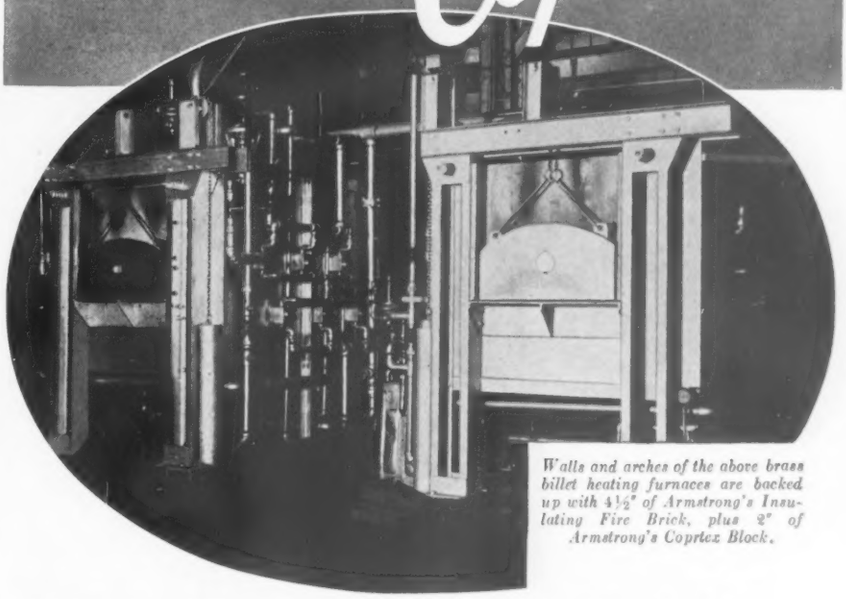

Walls and arches of the above brass billet heating furnaces are backed up with 4½" of Armstrong's Insulating Fire Brick, plus 2" of Armstrong's Coprtex Block.

THE above furnaces were recently rebuilt and insulated with Armstrong's Insulating Fire Brick and Coprtex Block. Tests made to compare the efficiency of the remodeled furnaces and the old, proved that the new rebuilt furnaces actually produced more forgings yet consumed only ¼ to ⅕ of the gas that was previously required. Heating-up time also was reduced by as much as 25%.

In all types of furnaces, where block insulation is specified, Armstrong's High Temperature Block and Heat Insulating Cement provide dependable, low-cost insulation. They have been subjected to rigid laboratory test . . . and, in addition, have proved their high efficiency in actual installations under varying conditions.

For engineers wishing to make open specifications for high temperature insulation, Armstrong will provide complete specifications outlining the standards required for the different physical characteristics. Write today for a copy of the new, illustrated booklet on Coprtex. Armstrong Cork Products Co., Building Materials, Division, 985 Concord St., Lancaster, Pennsylvania.

Advantages of Coprtex Block and Cement

1. Safe for use up to 1800° F.
2. Low lineal shrinkage
3. Superior insulating efficiency
4. High modulus of rupture
5. Will accommodate rivet heads
6. Light in weight
7. Available in special shapes
8. Reasonably priced
9. Cement reclaimable in case of repairs
10. Cement has unusual stickability
11. Cement is easy to apply

Armstrong's
HIGH TEMPERATURE INSULATION
INSULATING FIRE BRICK · HIGH TEMPERATURE BLOCK
PLASTIC CEMENTS · DIATOMACEOUS EARTHS

base. While bookings have been heavier lately, producers are inclined to discount the influence of recent price reductions as the cause of the upturn. Automotive demand accounts for a small part of the betterment. Most purchases still are for immediate needs.

Buffalo — Business is slightly better but still light and does not match the improvement in sentiment. Despite low inventories, consumers and jobbers are ordering for only present needs.

St. Louis—Base prices on sheets at Granite City, Ill., will be continued at $2 a ton over Gary base, it has been announced by Granite City Steel Co. This makes the local market one of the few points to carry a differential over Gary and Pittsburgh. The spread between Granite City and Pittsburgh now is $2 a ton, compared with $4 formerly. While inquiries for sheets have been slightly heavier lately, business generally continues quiet. More interest is being shown in galvanized sheets, especially in the south, where improved demand for roofing has appeared.

Birmingham, Ala. — Due to activity of jobbers and dealers in replenishing stocks, quite a noticeable upturn has developed in sheets, particularly galvanized. No spectacular movement is reported, but demand is reported fairly consistent over the past few days.

Strip

Strip Prices, Page 83

Pittsburgh — Small orders still constitute most of the strip buying but the total is slightly heavier. Indications from automotive partsmakers are that first signs of improved buying will not appear until the latter part of August. Strip production has recovered from the dip during the holiday week.

Cleveland — Hot and cold-rolled strip users are ordering cautiously and little, if any, heavier in the aggregate. While uncertainty as to the best source of supply, as a result of changed prices, is a factor in restricting demand, the low rate of consumption remains the most important deterrent to more active buying. Mill operations are unsteady, reflecting day-to-day fluctuations in orders.

Boston—Recovery in cold strip buying is slow and production is light and uneven. Absorption of additional freight charges in competing in Midwestern markets may cause the loss of some business there for local producers because of its unprofitable nature. Hot strip, one of the few products remaining on a Pittsburgh base for most of New England, may be thrown on a Cleveland or Youngstown base for less carload shipment.

New York — Narrow cold strip demand shows occasional gains, apparently due to open spots in consumer inventories rather than to lower prices. Clarification of quotations has released some tonnage, but total consumption remains light. The outlook for builders hardware and electrical household appliances has improved moderately, but orders from automotive accessory makers are small. High differential on commodity strip at Worcester broadens the market area covered by Pittsburgh producers of this product to beyond Hartford, Conn.

Buffalo — More rapid recovery in strip buying awaits better operations of consumers since small stocks have had little effect in stimulating purchasing beyond current requirements. Orders have improved only a shade lately. The leading strip mill of the district continued to work a triple turn most of last week.

Birmingham, Ala. — Demand for strip is dull although a renewal of buying is expected late this month or early next when shipments of cotton ties ordinarily get under way.

Plates

Plate Prices, Page 82

Philadelphia — Ship plate tonnage has failed to appear in the volume anticipated, although Sun Shipbuilding & Dry Dock Co. is expected to enter the market shortly for requirements against C-2 boats placed by the maritime commission. No additional navy releases are reported, but formal award of about 1200 tons here is looked for the next few days. Miscellaneous business is sufficient to support present operations; in fact, one mill now is cutting into its backlogs of ingots.

Cleveland — A substantial plate tonnage will be required for 3000 feet of 36 to 42-inch pipe for a new water intake, Sandusky, O. Other plate needs are at a minimum here, confined to demand from structural fabricators and builders of presses and other industrial equipment.

Chicago—Plate requirements for fabricated structural work are heavier, although purchases for railroad needs remain dull. Little prospect for an early upturn on any marked scale in railroad buying is seen.

Boston — Plate work is heavier, with 350 tons placed for tanks and new inquiries for other work pending. Prospective work for shipyards is increasing, 1200 tons being involved in lighthouse tenders. Releases from shipbuilders are heavier, notably for navy yards. Requirements for private yards, however, are not widely distributed. Most of the several thousand tons of plates required for three submarines to be built by a Connecticut private yard is not needed immediately. Plate demand from boiler, structural and miscellaneous fabricators is slack.

New York—Plate inquiries are slightly heavier, but little actual gain in orders has occurred. Some inquiries are attributed to interest of consumers in checking prices. Prices are becoming more stabilized and with freight from Claymont, Del., 19 cents, the local delivered price generally is 2.29c. Tank fabricators report little activity but look for better business as result of PWA work. A number of such plans are under way and are expected to be ready for bidding early in August. Ship specifications are light. More of the 30 steel scows for the municipal sanitation department, requiring 9000 tons of steel, probably will be built in the metropolitan area.

Birmingham, Ala. — While there has been, as yet, nothing but small and widely scattered business in plates, award of approximately 20,000 tons of steel for the Southern Railway's freight car order will have a beneficial effect on demand for plates. Placing of orders for steel for the Southern business is expected momentarily.

San Francisco—Interest in the plate market centers around outcome of bids on welded conduit lining plates for the Grand Coulee dam, Washington, calling for 2700 tons. No awards of size were reported and other pending business is confined to unimportant lots. To date this year 15,382 tons have been placed, compared with 29,442 tons for the same period last year.

Seattle — City officials at Vancouver, B. C., are considering tenders for furnishing 25,175 feet of 32 to 60-inch welded steel pipe, involving 3000 tons but no award has been released. Steel Tank & Pipe Co., Portland, Oreg., is fabricating nine storage tanks, totaling 1500 tons, for Oregon and Washington points for Union Oil Co. No announcement has been made concerning award of 2700 tons involved in welded plate conduit linings for Coulee dam, bids opened at Denver, July 1. Seattle has received tenders for a small tonnage of 24-inch steel pipe.

Plate Contracts Placed

1500 tons, storage tanks for Union Oil Co., San Francisco, to Steel Tank &

Pipe Co., Portland, Oreg.
415 tons, three pressure gas holders, Buzzards Bay Gas Co., Hyannis, Falmouth and Chatham, Mass., to Western Gas Construction div., Koppers Co., Fort Wayne, Ind.
200 tons, 1,660,000-gallon welded spheroid water tank, Brookline, Mass., to Chicago Bridge & Iron Co., Chicago.
150 tons, fuel oil tanks, Manning Company, Rutland, Vt., at Fort Anne, N. Y., to Chicago Bridge & Iron Co., Chicago.
Unstated tonnage, 250,000-gallon elevated steel water tank and tower, U. S. Southwestern Reformatory, El Reno, Okla., to W. E. Caldwell Co., Louisville, Ky., $4297, bids July 8.

Plate Contracts Pending

3000 tons, 32 to 60-inch welded steel water pipe for Vancouver, B. C., bids in.
2700 tons, conduit linings for Coulee project; bids in at Denver, July 1.
2000 tons, including approximately 1200 tons of plates, seven lighthouse tenders, riveted construction; bids Aug. 10, Commissioner of lighthouses, Washington, for delivery at Staten Island, N. Y.; Detroit, Portland, Oreg., Portsmouth, Va., New Orleans and St. Louis.
400 tons, 13-foot penstock, dam, Pittsburgh, N. H., B. Perini & Sons Inc., Framingham, Mass., general contractor; Phoenix Bridge Co., Phoenixville, Pa., awarded small tonnage structural steel.
230 tons, tunnel lining and ribs, dam, Whitney Point, N. Y.; bids July 28 to United States engineers, Binghamton, N. Y.
110 tons, water tank, Osterville, Mass., taking bids.

Bars

Bar Prices, Page 82

Pittsburgh—Jobber specifications for hot-rolled bars are slightly heavier, representing additions to inventories which have been depleted through increasing numbers of small orders from manufacturers whose stocks are low. Jobber buying dropped with the announcement of new prices, and the increase now partially offsets that lull. A few small automotive orders are appearing, obviously for first trials of 1939 models.

Cleveland — Consumers of commercial and alloy steel bars continue to place orders only for actual needs and for prompt delivery. Requirements of auto partsmakers, farm and road equipment builders remain at the generally low levels prevalent during June, and no material improvement is anticipated before August at the earliest. Current low prices have failed to stimulate demand as some sellers hoped. Mill operations are substantially unchanged.

Chicago — Sales of common iron bars have leveled off following a slight increase traceable to the reduction in price. When the local market was cut to 2.15c, and at the same time the Chicago-Terre Haute differential eliminated, a little new business came in from railroads, implement makers and wood tank builders.

Boston—Despite a few orders released by warehouses, business in commercial and alloy steel bars reveals only slight recovery. Forging shops in most instances lack orders for sustained operations and are buying sparingly. Shipyard needs are mounting but marine hardware makers are less active. Alloy bars for three of the submarines placed in this district will go to a Pittsburgh producer. Western New England bar consumers will benefit most from new prices, soft steel bars now being 2.62c, Boston. Some confusion over prices and freight rates still exists.

New York — Releases of bars by freight car builders recently authorized to proceed with work on 5550 units for the Southern Railway is the only outstanding development in this market. Low stocks of consumers, however, lead to some expectations of early revival in buy-

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ing, with automotive accessory interests counted on to stimulate activity next month. A slight effect of the federal spending program is noted in specifications from builders of concrete and road building machinery to meet expanding PWA work.

Birmingham, Ala. — Steel interests report an upturn in spot demand for concrete bars which set in shortly after the recent price revisions. The upward trend has been gradual but steady, and some increase in shipments has been noted.

Philadelphia — Carbon and alloy steel bar specifications are slightly more active, due to better consumption as well as to inventory replenishment. Gains in bar requirements are most noticeable among builders of heavy equipment.

Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 83

Since the extra 5 per cent discount from list prices granted recently is in excess of savings resulting from price reductions on raw material, bolt and nut producers hope for a steadier market. Buying of bolts, nuts and rivets continues quiet in spite of lower prices, with jobbers the chief source of demand. Railroad purchases are almost nonexistent, while seasonal inactivity is restricting business from farm equipment builders. Buying for 1939 automotive models is counted on to stimulate the market during late summer.

Pipe

Pipe Prices, Page 83

Pittsburgh—Improvement in pipe demand is expected to be deferred until fall. Activity in oil country goods recently has shown a slight decrease. Barge movements of pipe has begun to the Houston warehouses to build up complete stocks there and give consumers advantage of barge rates. Boiler tube activity is near a standstill, with railroad buying light.

Cleveland — Stock turnover of pipe jobbers has received little stimulus from lower prices. Demand from domestic sources is a trifle heavier, and inquiries for new water distribution systems for small municipalities are slightly more numerous, but in some instances such inquiries are for cost checking and there is no assurance work will go ahead soon.

Chicago—Cast pipe demand has been quieter, despite recent price reductions. Practically no business has appeared for WPA projects and PWA work which shortly is expected to require substantial tonnages has yet to appear for bids.

Boston — Heavier releases, sustained buying and favorable prospects have raised operations of district cast pipe foundries to five days weekly. Purchases approximate 1250 tons. Substantial buying is seen for PWA projects. Steel pipe demand is steady, with better movement of merchant pipe expected to result from additional public building. A 42-inch pipe line, one mile long, at Hartford, Conn., is thought likely to go concrete, taking 660 tons of ¼-inch plates from the market.

New York — Heavy purchases of cast pipe by the district procurement division offices are expected to start around Aug. 1 and continue for several months. Meanwhile buying has slumped, most contracts confined to individual lots of less than 100 tons. Cortland, N. Y., is expected in the market shortly for 300 tons, 12-inch and under. Several hundred tons of steel pipe, 2 to

8-inch, are required for a high-pressure welded gas line connecting several distributing points on Cape Cod, Mass.

San Francisco—All current new inquiries for cast iron pipe are confined to lots of less than 100 tons and only three larger projects are pending. So far this year 17,720 tons have been placed, compared with 17,852 tons for the same period a year ago.

Cast Pipe Placed

350 tons, 6 to 15-inch, class 150, metropolitan district commission, Hartford, Conn., to R. D. Wood & Co., Florence, N. J., bids July 5.
200 tons, 8 and 10-inch, with possibly some 12-inch, North Adams, Mass., to United States Pipe & Foundry Co., Burlington, N. J.
200 tons, 8-inch, Kingston, R. I., to Warren Pipe Co., Everett, Mass., through contractor.
185 tons, 6, 8 and 12-inch, Portland, Me., to Warren Pipe Co., Everett, Mass.
115 tons, 12-inch, Fitchburg, Mass., to Warren Pipe Co., Everett, Mass.
100 tons, 8-inch, Mount Vernon, N. Y., to Donaldson Iron Works, Emaus, Pa.

Steel Pipe Placed

200 tons, steel pipe piling, foundations, building, Lever Bros., Cambridge, Mass., to A. O. Smith Corp., Milwaukee.

Cast Pipe Pending

2500 tons, 5 to 12-inch, Osterville, Mass., revived and now up for estimates.
300 tons, 12-inch and under, Cortland, N. Y.

Wire

Wire Prices, Page 83

Pittsburgh — Wire markets remain dull here, and while prices have been clarified, buying is for fill-in purposes. New quotations serve to stabilize the market as to price but has been without influence on business. July tonnage to date approximates that of a month ago. Automotive orders are small, buying for 1939 models not being expected for another month except for some preliminary purchases by partsmakers.

Cleveland — Manufacturers' wire continues more active than merchant products, jobbers not being inclined to add materially to inventories in view of the slow turnover of stocks. Some sellers report that despite lower prices, bookings so far this month are less than in the corresponding June period. While seasonal influences dim the outlook for the balance of the month, a reversal of the present trend is looked for early in August.

Boston—While New England mills still are competitive in Midwestern markets, loss of some business is seen as result of the new price schedule on wire products. Larger volume is required to give a clear analysis. Price revisions on wire specialties continue to be made, but the unsettled situation tends to restrict buying. Orders frequently represent stock depletion of consumers. With Worcester retaining old differentials over Pittsburgh on most important products, the New York city area is about the dividing line between the two points.

New York — Wire buying is slightly heavier and covers a broader list of lighter products. Revisions of wire specialty prices is about complete, new quotations being lower in line with reductions on basic and spring wire, and have aided releases moderately. Bed spring makers are taking better shipments, while automotive parts interests are ordering more actively. The mild upturn does not include heavier products which still lag as do electrical material. Rod buying is restricted to an extent by consumer inventories. Bright wire from Pittsburgh or Worcester is 2.96c, New York. Spring wire is 3.56c, delivered.

Birmingham, Ala. — Wire prod-

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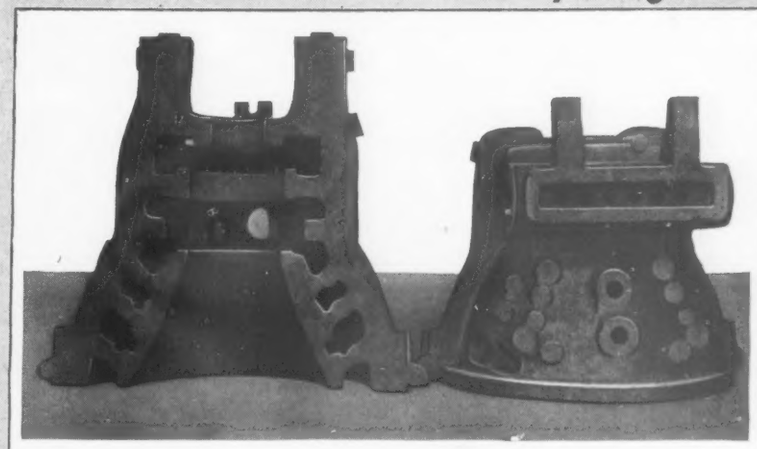

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ucts, including nails and fencing, have responded to a dealer-jobber flurry to replenish stocks. Digest of the new price structure is expected to be followed by additional business in this class of products.

Rails, Cars

Track Material Prices, Page 83

Distribution of more than 80,000 tons of steel for the 5550 cars for the Southern Railway dominates the railroad steel market. In fact, it is the largest distribution in many months and will soon be reflected in improved operations at several plants.

This follows recent approval by the interstate commerce commission of construction contracts let early in May. As noted at the time, the Pullman-Standard Car Mfg. Co., Chicago, received tentative award of 2000 box cars; Mt. Vernon Car Mfg. Co., Mt. Vernon, Ill., 200 furniture cars, 1000 box cars and 50 mill-type gondolas; American Car & Foundry Co., New York, 1250 steel gondolas; Pressed Steel Car Co., Pittsburgh, 700 steel gondolas; Ralston Steel Car Co., Columbus, O., 250 stock cars; and Greenville Car Co., Greenville, Pa., 100 steel flat cars.

Jesse H. Jones, chairman of the reconstruction finance corporation, has announced that the corporation has approved the purchase of $13,500,000 Southern Railway 4 per cent Equipment trust certificates, the proceeds of which are to be used for the purchase of the new freight cars.

The New York board of transportation will open bids in September on 11 miscellaneous subway service cars.

A $1,700,000 contract for electrical equipment for 10 locomotives has been awarded by the Pennsylvania railroad to the Westinghouse Electric & Mfg. Co. The equipment will be built at the plants at East Pittsburgh, Pa., Sharon, Pa., and Newark, N. J. The chassis for the locomotives will be built at the Altoona, Pa., shops of the Pennsylvania.

American Smelting & Refining Co., New York, has withdrawn an inquiry for 30 zinc dust cars because of the unsettled political situation in Mexico. Baltimore Transit Co., Baltimore, has withdrawn specifications for 40 trolley cars and may buy 40 trolley coaches instead. Boston Elevated railway has at least temporarily dropped its inquiry for 28 trolley units.

In correction of a report carried in last week's issue, domestic freight car awards in June amounted to 1178 units, bringing the total for the first half up to 8021, as against 46,078 in corresponding period last year.

Tin Plate

Tin Plate Prices, Page 82

Pittsburgh—Possibility of a price revision this fall is inducing tin plate users to buy sparingly for only early needs. Heavier releases are expected with the advent of the active canning season, and while some fill-in orders to round out stocks also are looked for, inventories are thought likely to be held down until prices are determined. Tin plate operations are 35 per cent, off slightly since a week ago.

Chicago—Tin plate production is higher here, with one interest raising its output from 50 per cent to 60. Both sales and releases are reported heavier. Deliveries of three weeks is being offered.

New York—American tin plate exporters have reduced prices about 10 cents base equivalent for ship-

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ment to most parts of the world. The move results from increasing strength of the dollar exchange in relation to sterling and the French franc. Little export business is current, largely because foreign producers find less demand at home and are participating more actively in world trade. Domestic buying here also is restricted, with most consumers still having fair stocks on hand. The bulge in packing can needs appears over, while business in general line containers has shown little change lately.

Shapes

Structural Shape Prices, Page 82

New York — Closing July 27, the board of water supply, New York, takes bids on tunnel work, contract 306, Delaware Aqueduct project, involving 16,750 tons, exclusive of 4250 tons of reinforcing bars. Included: 9000 tons, steel sheet piling; 4500 tons, structural steel tunnel supports and 3250 tons of fabricated structural steel. Mounting requirements also include 3500 tons, ramp connections, Canal street, west side elevated highway, New York, bids in, while estimates close July 19 on 5250 tons, steel superstructure, North Bergen, N. J., approach, Lincoln tunnel, New York Port authority project. The new inquiry for water tunnel work makes approximately 29,000 tons pending for the Delaware water shed project, 12,000 tons being under contract, but not bought.

Pittsburgh — Fair tonnages are out for bids, principally public work, and the price situation no longer appears a market deterrent. Awards are few and largely for public projects.

Cleveland — A slight improvement in structural inquiries is limited to small tonnages. The largest pending project of a private nature is the Timken Technical high school, Canton, O., involving 1200 tons. Public work is more encouraging, with a substantial tonnage involved in the Cloverleaf development near Brecksville, O., and the east approach to the new Main street bridge, Cleveland.

San Francisco — Structural shape awards are limited and do not exceed 600 tons for the week. Bookings for the year aggregate 67,610 tons as compared with 112,901 tons in 1937. Bids were just opened on 6000 tons for a bridge over the Sacramento river at Redding, Calif., and American Bridge Co. submitted the low bid. Pending business exceeds 12,500 tons.

Chicago — Shapes contribute heavily to recent gains in total bookings of finished steel. Inquiries for fabricated material are outstanding, there being 3250 tons for a Florence, Ala., bridge. Other bridge inquiries involve 1000 tons. Awards include 400 tons for a Rock Island railroad bridge, Bureau, Ill.

Boston — Few large inquiries are active. Rebid work includes 650 tons for a New Hampshire armory

Shape Awards Compared

	Tons
Week ended July 16	12,925
Week ended July 9	13,606
Week ended July 2	25,128
This week, 1937	15,390
Weekly average, year, 1937	16,060
Weekly average, 1938	16,071
Weekly average, June	20,758
Total to date, 1937	775,159
Total to date, 1938	466,061

Includes awards of 100 tons or more.

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Behind the Scenes with STEEL

Funny Fellow

■ We have a fellow here in the office with a sense of humor. You wouldn't suspect it to look at him, nor to talk with him either. He gets his laughs when he isn't even around. Usually his current *piece de resistance* will pop up in the inter-office mail at some unexpected moment when you're all down in the mouth and just about at the end of your tether. You'll recognize the envelope and tear it open, chuckling to yourself before you even read it. He has his own secret mailing list and one feels quite proud to be included. There is no regular schedule nor is an answer expected. He keeps newcomers in the dark since none of the masterpieces are signed and even if pinned down he admits nothing. He specializes in "doctoring" clippings from STEEL, *The Police Gazette, Town & Country* or what have you. He is an avid classified hound, but he branches out from that and even uses "props" like the time he sent us the mouse trap wrapped in the playbill of "Brother Rat". Evidence of another is the beautiful portrait of Louise Hovick (Gypsy Rose Lee to you) which hangs in one of the editorial rooms on the ninth floor. Jim Powell new and capable young Chicago editor, always felt he had a way with women but even he was surprised to receive this picture one recent day with the inscription daintily written in a feminine hand: "To Jimmy, whose insistence on a *stainless strip* guided me through my Minsky career." And then another time he took some dried prunes * * * * * * * but then L. D. "Brad" Bradbury's stuff isn't always the kind you'd tell the kiddies for bedtime stories.

9th. Floor Aviation

■ One of STEEL's more stable editors, who refuses to be quoted by name, spoiled our whole afternoon last Thursday. We were pluggin' away at our chores when the flash came that Howard Hughes had just landed in New York after circling the earth in three days and 19 hours. Everyone ohed and ahed but this fellow disgustedly remarked that he couldn't see what all the excitement was about. He thought the whole thing was being played up too much and furthermore, he said, why wouldn't it have been much simpler if Mr. Hughes had taken his plane straight up several thousand feet over Floyd Bennett field and just kept circling for twenty four hours until the earth made one full revolution and then he could land right back where he started. He could have had more time to look around and enjoy the trip and could have cut his time 'way down because he would have averaged something like 1000 miles an hour. A trip like that could be arranged so that if you took off at night it would be night all the way around or you could take the daylight swing which is quite nice. Well, if you think he's crazy (and you're an engineer of fair repute) we'd like to see your explanation of why this can't be done.

Likes It

■ There was little mix-up on a subscription over in Rochester, N. Y. and the circ. mgr. wrote to see if they wanted STEEL continued, because you know only 80 per cent of STEEL's subscribers renew year after year. The reason for this outstanding loyalty is probably very well expressed in their reply: *I would not consider discontinuing the magazine for it is far too valuable.*

Old Sol

■ It happens to someone every year, and this time Mike Newberger of the circulation department is the champ. He went out to the Jersey shore for a swim and stretched out face downward on the beach for a little rest. The next thing he knew the guard was poking him to wake him up and saving something about liking his steak well done. Mike is still sleeping face downward and doing all the other usual things such as eating off the mantel, etc.

—SHRDLU

and state office building. Awards also are light. With the exception of the Everett, Mass., interest, structural shops have small backlogs.

Philadelphia — Prospects for structural fabricators have taken a decided turn for the better, largely the result of government spending. Pennsylvania state authority is expected to go ahead next month on the Security prison and White Hill boys school jobs, requiring several thousand tons of structural and concrete bars. The authority is also in line for additional $50,000,000 WPA grant, for other institutional projects. Some private work is developing.

Seattle — Puget Sound navy yard received bids July 12 for 790 tons shapes. They will also take bids on July 20 for 377 tons for a $300,000 addition to the foundry plant. Awards are pending. For the Roza diversion dam, bids of Yakima, Wash., Aug. 5, 602 tons gates and hoists and 288 tons miscellaneous steel will be required, to be furnished by reclamation bureau.

Shape Contracts Placed

2700 tons, General Motors building, Worlds Fair, New York, to Bethlehem Steel Co., Bethlehem, Pa.; through Albert Kahn, Detroit.

2200 tons, high school for home-making, Brooklyn, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.; bids July 12, fabricating and erecting, steel direct.

1175 tons, bridge FAI52, Hart county, Kentucky, to Nashville Bridge Co., Nashville, Tenn.

660 tons, two penstocks, T. V. A. 149679, Hiwassee dam, North Carolina, to Chicago Bridge & Iron Works, Chicago.

500 tons, addition, Port Richmond high school, Staten Island, N. Y., to Bethlehem Fabricators, Inc., Bethlehem, Pa.; bids July 12, fabricating and erecting, steel direct.

400 tons, bridge 1163 Rock Island railroad, Bureau, Ill., to American Bridge Co., Pittsburgh.

380 tons, bridge, FAP-41-ABC Bryan county, Oklahoma, to J. P. Klein Iron & Foundry Co., Oklahoma City, Okla.

320 tons, state highway bridge, Royalton, Va., to Bethlehem Steel Corp., Bethlehem, Pa.

360 tons, General Electric building, Worlds Fair, New York, to Lehigh Structural Steel Co., Allentown, Pa.

300 tons, state bridge 1692, Marengo, Ind., to Midland Structural Steel Co., Cicero, Ill.

300 tons, various Oregon highway jobs, to Poole & McGonigle, Portland.

254 tons, bridge, Little river, McCormack county, South Carolina to Virginia Bridge Co., Roanoke, Va.; C. Y. Thomason Construction Co., Greenwood, S. C., general contractor. Virginia Steel Co., Richmond, Va., awarded 65 tons, reinforcing steel.

230 tons, garage addition, Water and Dock street, New York, to Levinson Steel Co., Pittsburgh.

230 tons, veterans administration facility building, Murfresboro, Tenn., to Duffin Iron Co., Chicago.

215 tons, bridge, Gould City, Mich., to American Bridge Co., Pittsburgh.

200 tons, roller gate dam, Great Northern Paper Co., Millinocket, Me., at Mattawankeag, Me., to American Bridge Co., Pittsburgh; S. Morgan Smith Co., York, Pa., designer and engineer.

200 tons, store, McCrory stores, Philadelphia, to Bethlehem Steel Co., Bethlehem, Pa.
195 tons, sewage disposal plant, Wyandotte, Mich., to Whitehead & Kales, Detroit.
185 tons, state bridge, contract 1685, Amo, Ind., to Pan-American Bridge Co., New Castle, Ind.
180 tons, bridge FAP-188-C, Hunt county, Texas, to Austin Bros., Dallas, Tex.
176 tons, store, for Horn & Hardardt, Philadelphia, to Belmont Iron Works, Philadelphia.
175 tons, bridge RC-3967, Fenton road, highway 134, Broome county, New York, to American Bridge Co., Pittsburgh; Lane Construction Corp., Meriden, Conn., general contractor $119,475.30, bids June 21, Albany.
160 tons, Englewood post office, Chicago, to Joseph T. Ryerson & Son, Chicago.
160 tons, repairs to dam 43, United States engineer, Louisville, Ky., to American Car & Foundry Co., New York.
150 tons, head house and other construction, Koppers Co., Kopperston, W. Va., to Ohio Structural Steel Co., Newton Falls, O.
150 tons, welding shop, navy yard, Brooklyn, N. Y., to Lehigh Structural Steel Co., Allentown, Pa.
130 tons, Woolworth store, Worcester, Mass. to Bethlehem Fabricators, Inc., Bethlehem, Pa.
125 tons, state bridge 1620, Maxville, Ind., to Midland Structural Steel Co., Cicero, Ill.
105 tons, roof framing, spec. 1085D, bureau of reclamation, Wyoming, to American Bridge Co., Pittsburgh.
105 tons, power house extension, Kalamazoo, Mich., to Kalamazoo Foundry Machine Co., Kalamazoo, Mich.
105 tons, warehouse and store, Enterprise department stores, Providence, R. I., to James H. Tower Iron Works, Providence; George B. H. Macomber Co., Boston, general contractor. Reinforcing awarded Truscon Steel Co., Youngstown, O.
100 tons, shapes and bars, 3-span I-beam overpass structure, Castleton, Vt., to Vermont Structural Steel Co., Burlington, Vt.; P. C. Ricci, Newport, N. H., general contractor, $17,431.78, bids June 24.
100 tons, 3-span I-beam bridge, Kelleyville, Okla., to J. B. Klein Iron & Foundry Co., Oklahoma City, Okla.; Gaines Bros., Miami, Fla., general contractor. Capitol Steel & Iron Co., Oklahoma City awarded reinforcing steel.

Shape Contracts Pending

16,750 tons, water tunnels, Delaware Aqueduct project, contract 306, bids July 27 to board of water supply, New York; following included: 9000 tons, steel sheet piling; 4500 tons, structural steel tunnel supports, and 3250 tons, structural steel.
6000 tons, Sacramento river bridge, Redding, Calif.; American Bridge Co., Pittsburgh, low.
3500 tons, ramp connections, Westside highway at Canal street, New York; P. T. Cox, New York, low.
3250 tons, bridge, Florence, Ala.; bids in.
2200 tons, state highway department, steel viaduct of truss bridge type with plate girder work, Ogden avenue over Chicago, Burlington & Quincy railroad and Cicero avenue, Chicago, bids July 22.
2000 tons, parcel post building, Los Angeles; bids again postponed until July 26.
1300 tons, state infirmary buildings, Meriden and Shelton, Conn.
890 tons, gates, hoists and miscellaneous, Roza diversion dam, materials to be furnished by Reclamation Bureau; bids at Yakima, Wash., Aug. 5.
475 tons, Benjamin Benneker junior high school, Washington; bids July 26, district commissioners.
465 tons, bridge No. 31, Chesapeake & Ohio railway, Brighton, O.
450 tons, bridge taking New York Central railroad tracks over Major Deegan boulevard, Bronx, N. Y.; Wilson & English Co., New York, general contractor, bids July 8.
400 tons, factory addition, Owens-Illinois Glass Co., Streator, Ill.
377 tons, addition to foundry building, Puget Sound navy yard, Wash.; bids July 20.
351 tons, bridge, Manchester, Iowa.
350 tons, armory, Manchester, N. H., refigured; bids July 20.
300 tons, state office building, Concord, N. H.; rebid July 12.
300 tons, Neptune Village apartment group, Atlantic City; Anthony P. Miller, Atlantic City, taking bids.
270 tons, I-beam span bridge, Greenwood, Ky., for state.
250 tons, two 125-foot spans for Matanuska, Alaska; bids in.
250 tons, building, Y. M. C. A., Geneva, N. Y.
200 tons, business administration school, Boston University, Boston; bids July 27; project mostly reforced concrete.
200 tons, Pedium Security prison, LaGrange, Ky.
180 tons, crossing at Colfax, Placer county, California, for state; bids July 27.
175 tons, power house, Seminoe dam, Parco, Wyo.; American Bridge Co., Pittsburgh, low.
150 tons, building, for Hancock Ware-

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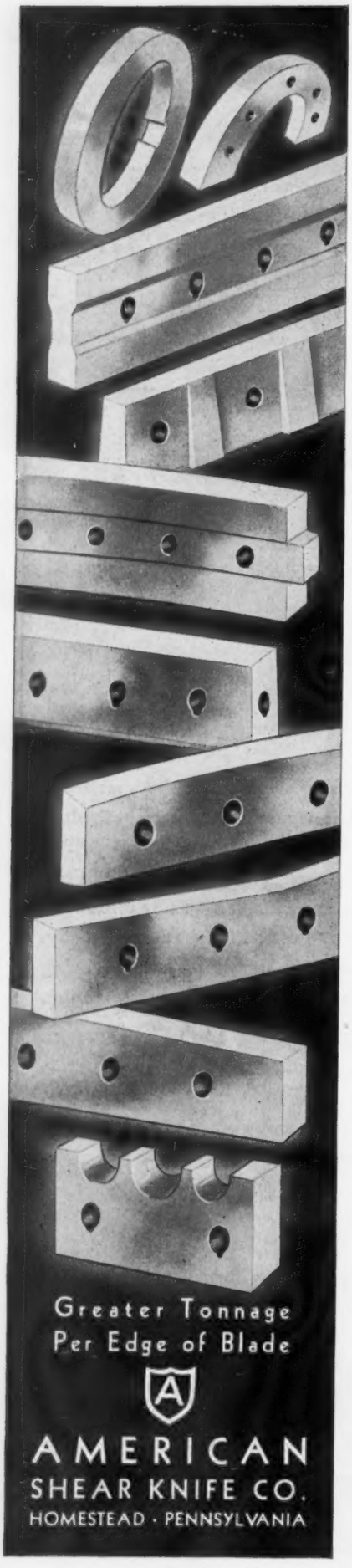

house Co., Philadelphia; bids July 21.
150 tons, Tillman subway, Saukville, Wis., for state.
150 tons, courthouse, Waltham, Mass.; bids July 22.
100 tons, sheet steel piling, customs house bulkhead at Ketchikan, Alaska; bids July 29.
100 tons, crossing near Brush, Morgan county, Colorado, for state; bids opened.
100 tons, bridge in Fresno and in Madera county, Calif., for state; bids opened.
100 tons, Hahnemann hospital, Philadelphia.

Reinforcing

Reinforcing Bar Prices, Page 83

New York — Including mesh, reinforcing steel purchases are estimated at 2500 tons, a sewer, Brooklyn, 1500 tons, being the largest. Concrete bar prices continue to sag despite recent reductions and much tonnage is going well under 2.29c, New York. Poirier & McLane Corp., New York, is low on the Red Hook housing foundations, Brooklyn, 478 tons, July 11. Bids close this week on a bulkhead, East river drive, Manhattan, taking a substantial tonnage of bars and steel piling.

Pittsburgh—Only small lots are included in recent orders and few large lots appear among new inquiries. Low bidders have been announced on 236 tons for the Norfolk navy yard and 250 tons for Panama canal work. Pennsylvania highway department closes bids July 22 on 225 tons of bars. Close competition on concrete bars is accompanied by reports of shading below the new 2.05c base for billet material.

Cleveland—Reinforcing bar demands from private sources continues at a minimum and anticipated improvement in public work has failed to develop. Largest of recent orders is 130 tons for a sewerage disposal plant, Wooster, O., with other bookings limited to lots of less than 100 tons. While prices generally are steady, a better test will be provided later this month with bids on 550 tons for the Cloverleaf development near Brecksville, O.

Chicago — Prospects in the reinforcing bar market have brightened perceptibly. Considerable tonnage is expected to be required for various war veteran buildings at different points. Cook county is awarding paving contracts for work involving about 1500 tons of bars on which previous bids were rejected. New bids were 21 per cent lower than original quotations. Prices are somewhat firmer and there is an increasing tendency to maintain the new 2.05c level despite occasional shaving on larger tonnages.

Boston—Heavy inquiry for concrete bars has developed for hospitals and for preliminary needs under the federal spending program. Highway work at Westerly, R. I., will take nearly 200 tons, mostly mesh. Small awards are more numerous, but the outstanding order is 500 tons for a dam at Mattawankeag, Me.

Philadelphia—City of Richmond, Va., is taking bids July 19 for a wharf wall requiring 650 tons of bars. Several smaller jobs are also before the trade including some private work. Fabricators are expecting considerable business as a result of the WPA program which may include the Harrisburg-Pittsburgh express highway.

San Francisco — Reinforcing market was the most active one last week and awards aggregated 1590 tons, bringing the total for the year to 60,233 tons, compared with 49,866 tons in 1937. Unnamed interesst secured 500 tons for a hotel at Albuquerque, New Mexico. The marine corps at San Diego has taken bids on 300 tons and bids open July 27 for 204 tons for a crossing at Colfax, Calif.

Seattle — The outlook has improved with development of numerous federal building projects. Meanwhile rolling mills are marking time. Prospective tonnages are mostly small lots. Award is expected soon for 4000 tons of concrete bars for the reclamation service, bids opened at Denver June 22, Bethlehem Steel Co. is low. Same department will open bids at Yakima, Wash., Aug. 5 for the Roza diversion dam, involving 790 tons of reinforcing to be furnished by the government.

Concrete Bars Compared

	Tons
Week ended July 16	**4,002**
Week ended July 9	**19,358**
Week ended July 2.....	**13,037**
This week, 1937.....	**2,843**
Weekly average, year, 1937	**6,266**
Weekly average, 1938	**5,979**
Weekly average, June.....	**4,957**
Total to date, 1937	**164,938**
Total to date, 1938	**173,407**

Includes awards of 100 tons or more.

Reinforcing Steel Awards

15,600 tons, housing project, Metropolitan Life Insurance Co., Bronx, N. Y., to Bethlehem Steel Co., Bethlehem, Pa. Reported in preceding issue as 1500 tons due to typographical error.
1500 tons, sewer, Avenue T and Flatbush avenue, Brooklyn, N. Y., to Igoe Bros., Newark, N. J., Luang Construction Co., Brooklyn, general contractor.

500 tons, roller gate dam, Great Northern Paper Co., Millinocket, Me., at Mattawankeag, Me., to Bancroft & Martin, Portland, Me.; S. Morgan Smith Co., York, Pa., designer and engineer.
500 tons, hotel, Albuquerque, N. Mex., to unnamed interest.
332 tons, mesh, highway project RC-3958, Truxton Hamlet, Cortland county, New York, to Bethlehem Steel Co., Bethlehem, Pa.; Frank Stento, Binghamton, N. Y., general contractor, $375,987.65, bids in.
250 tons, buildings for high school East Bakersfield, Calif., to unnamed interest.
200 tons, addition to Queen of Angels hospital Los Angeles, to Blue Diamond Corp., Los Angeles.
186 tons, highway work in Ventura county, California, for county, to unnamed interest.
180 tons, bus terminal Portland, Oreg., to Mercer Steel Co., Portland; Hoffman Construction Co., Portland, general contractor.
150 tons, Oregon state highway crossings, to various Portland firms.
104 tons, bureau of reclamation, invitation 28,064-A, Glendive, Mont., to Youngstown Sheet & Tube Corp., Youngstown, Ohio.
100 tons, addition to Bakersfield Californian, Bakersfield, Calif., to unnamed interest.
Unstated tonnage, school, Rushville, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.; Werner Spitz Construction Co., Rochester, N. H., general contractor.

Reinforcing Steel Pending

4250 tons, water tunnels, Delaware Aqueduct project, contract 306, bids July 27, board of water supply, New York.
1000 tons, parcel post building, Los Angeles; bids again postponed until July 26.
790 tons, Roza diversion dam; bids at Yakima, Wash., Aug. 5 for construction; reclamation bureau to supply materials.
650 tons, wharf wall, Richmond, Va.; bids July 19.
478 tons, foundations, Red Hook housing foundations, Brooklyn, N. Y.; Poirier & McLane Corp., New York, low, bids July 11.
428 tons, mesh, highway sections, Hamilton, Erie and Delaware counties, New York, bids in July 12, Albany.
332 tons, state highway letting, Frankfort, Ky., bids in.
262 tons, mesh, highway project RC-3971, Broome county, New York; A. I. Savin Construction Co., East Hartford, Conn., general contractor, $304,436.50, bids July 7, Albany.
250 tons, Panama Canal schedule 3364, Washington; Youngstown Sheet & Tube Co., Youngstown, O., low bidder.
236 tons, requisition 1091-NSAF, Norfolk navy yard, Portsmouth, Va.; Hall-Hodges, Norfolk, Va., low bidder.
204 tons, crossing at Colfax, Placer county, California, for state; bids July 27.
155 tons, mostly mesh, highway section, 1.524 miles, width 51 and 62 feet, Westerly, R. I.; bids July 25, board of contracts, standards and purchases, state office building, Providence.
120 tons, hotel, Galesburg, Ill.
105 tons, mesh, highway project RC-3972, Chenango-Otsego counties, New York; Lane Construction Corp., Meriden, Conn., general contractor, $134,-950.05, bids July 7, Albany.
100 tons, hospital, Monroe, Wis.
100 tons, Hahnemann hospital, Philadelphia.
100 tons, service building and tank foundation, for Atlantic Refining Co., Philadelphia; bids July 21.
100 tons, building, for Hancock Warehouse Co., Philadelphia, bids July 21.

Pig Iron

Pig Iron Prices, Page 84

Pittsburgh—In contrast to increased activity in other districts, new pig iron business here since the reduction in prices has been small. Buying locally represents only immediate needs and there has been an absence of forward purchases despite rumors in the East of an increase in prices next month. At the same time additional consumers are in the market as a result of low inventories at practically all plants.

Cleveland — Further curtailment in foundry operations has resulted from vacations and inventory-taking, and no material improvement is expected until early August. Sellers report continued slight improvement in pig iron bookings for third quarter delivery, but releases against present contracts have failed to gain correspondingly. In-

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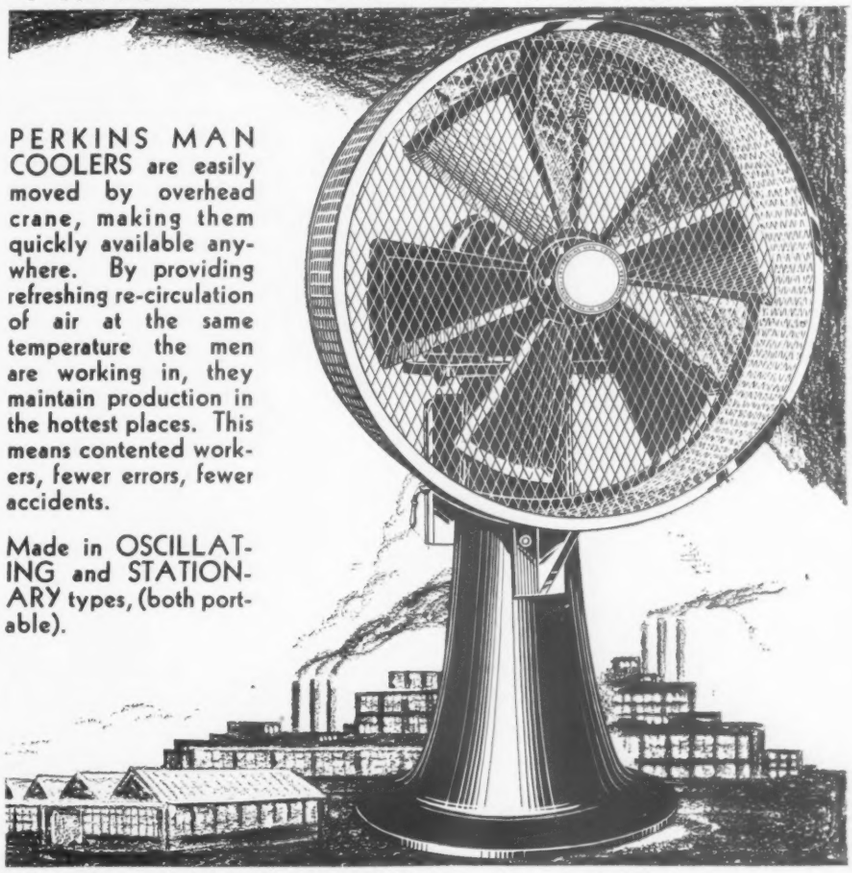

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ventories of most foundries are relatively lower than those of iron producers.

Chicago—Pig iron sales at reduced prices continue heavy, but shipments still lag and July as a whole is expected to show only a slight gain over June. District foundry operations are unimproved and plants generally are operating only three days a week. Some foundries are dissatisfied with the price situation, due to necessity of reducing quotations on castings in proportion with the reduction in pig iron.

Boston—Improvement in foundry melt has been too small to find reflection in pig iron buying, orders being largely for early needs. Pipe foundry and steelworks operations are slightly higher and other foundries anticipate better schedules, but this has not stimulated forward coverage. Larger consumers, particularly textile equipment builders, have ample stocks for current needs. Rising scrap prices tend to offset the advantage to melters of the $4 cut in pig iron.

New York — Pig iron buying has receded slightly from its recent bulge. Current orders are principally carlots for prompt shipment. Talk of an impending price advance has subsided, but iron sellers anticipate an expansion in bookings next month to be maintained into fall. Export inquiry is spotty.

Philadelphia — A marked rise has developed in pig iron demand, largely the reflection of midwestern activity and the reaction to reports prices might advance. District foundries have placed lots of 500 tons and more, but much buying remains to be done. Foundry operations continue low.

Buffalo — Pig iron is moving a trifle more actively, with some small orders being placed for prompt needs. A better tone pervades the market, though lower prices so far have had little effect on business. Better schedules are reported for some foundries in and around Rochester and Syracuse. Local melters usually average only two heats a week.

Cincinnati — Price reductions plus rumors of upward revisions next month are bringing smaller pig iron consumers to cover for third quarter. Larger melters, however, are making few purchases. Current business is more active than during the previous quarter, with bookings estimated up to a level of about 35 per cent. No appreciable change is noted in foundry operations, although melters are more optimistic. Demand for castings is slightly heavier.

St. Louis — Sales are slower following fairly active third quarter coverage recently. About 40,000 tons is estimated to have been booked since the $4 price reduction, with business well diversified. Foundry operations continue slow at about the June rate, but July pig iron shipments give indications of being the best since April, moderately above June.

Birmingham, Ala. — While pig iron producers report a flurry of booked orders the recent price concession in pig iron has failed to bring about increased production, although some reports are heard that Woodward may blow in another furnace within a week. Five furnaces are in blast.

Toronto, Ont.—Pig iron sales are well sustained for the season and orders continue over 2000 tons weekly. Difficulty in obtaining sufficient scrap is aiding pig iron business. Practically all purchases are foundry and malleable iron, with little demand for basic. Foundry operations hold around 70 per cent, with pig iron production near 65 per cent.

Scrap

Scrap Prices, Page 86

Pittsburgh — Scrap prices again have advanced, carrying heavy melting steel to a new high for the present recovery at $14 to $14.50 for the No. 1 grade. The latest increase is 50 cents. With dealers bidding $14 for this grade the market is strong and the trade regards a further upturn as not unlikely. Heavy melting steel has risen $3.75 from its June low. Most mill purchases lately have been small, although inventories are relatively light and consumption is tending upward.

Chicago — Heavy melting steel advanced 50 cents the past week, following the mill sale of a small tonnage at $11.75. A number of other grades have risen a like amount or more. Dealers are unwilling to dispose of yard stocks they have accumulated, in view of the absence of a leveling off in prices. Recent railroad lists have been small.

Boston—Dock prices on export scrap continue to advance, followed reluctantly by brokers, who have yet to ship tonnages booked at lower prices. Nearly 14,000 tons, mostly heavy melting steel, left New England lately. Strength continues in scrap for domestic shipment, despite lack of shipments to eastern Pennsylvania and indifferent buying by New England consumers.

New York — The recent rise in dock delivery prices of export scrap appears to have halted for the present at least. Some brokers are offering $10.50 for No. 1 heavy melting steel, $9, barge, for No. 2 and getting some material at these prices. Dealers still are reluctant to sell, however. Several eastern mills are taking shipments, reflecting higher prices for some grades. On one of the German lines, a broker is shipping hydraulic bundles as part of the cargo on passenger ships.

Philadelphia — Scrap prices are strong, and No. 1 heavy melting steel is up 50 cents at $14. No. 2

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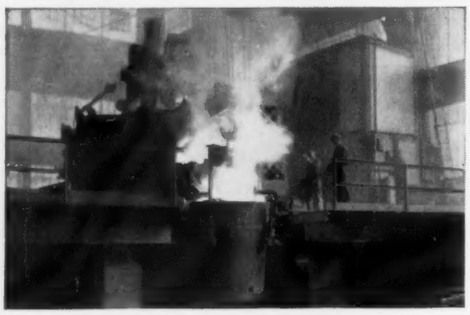

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steel is likewise higher at $12.50, with a sale reported under negotiation at $13. Other grades participating in the higher market include breakable cast, grate bars and specialties. Buying of fill-in tonnage for an export cargo clearing today was done at about $13, Port Richmond. The recent large export order is understood to be more than half covered.

Buffalo — Scrap prices continue strong here, with heavy melting steel up 50 cents at $12.50 to $13. This is an increase of $1.50 the past two weeks. Strength in the market is augmented by the absence of shipments from upper lake sections, only two boats having arrived with scrap to date this year from Michigan points.

Detroit—Bullish sentiment continues to predominate, despite continued quiet in consumer demand. Prices have advanced, heavy melting steel being up 75 cents while bundles and turnings are 50 cents higher.

Cincinnati—Mill interest in scrap buying is light, with dealers supplying principal activity. Prices continued strong but dealers show reluctance to pay current quotations. Possibilities of a further increase in dealer bids, however, is indicated by the fact that scrap is coming out less freely than was hoped for.

St. Louis — Iron and steel scrap prices continue to advance despite absence of consumer buying, with a number of grades up 25 cents to $1.50.

Birmingham, Ala. — Some renewed activity is reported in the scrap market, particularly in heavy melting and in No. 1 cast, demand for which has shown considerable revival despite the slash in pig iron prices. Dealers report a considerable steadying of the market but without notable price changes. No. 1 heavy melting is up 50 cents to $12.

Toronto, Ont.—Scrap prices generally are steady with dealers reporting little difficulty in disposing of most grades as fast as received. Heavy melting steel, machinery cast and stove plates are moving well, with some scarcity reported. While a few shipments are being made to the United States, business of this nature has not reached the proportion dealers expected.

Warehouse

Warehouse Prices, Page 85

Pittsburgh — Orders here are extremely light, with buyers purchasing only for immediate needs in the face of price uncertainties. Newly announced reductions in quantity extras are expected to have a stabilizing effect on quotations. The new setup follows: Base, 400 to 1999 pounds; under 100 pounds, add $1; 100 to 399 pounds, add 50 cents; 2000 to 9999 pounds, deduct 20 cents; 10,000 to 39,000 pounds, deduct 30 cents; over 40,000 pounds, deduct 40 cents.

Cleveland — Response of warehouse buying to lower prices has been disappointing. Distributors predict July will be one of the poorest months this year but expect substantial improvement in August, with low inventories of consumers aiding the upturn. A revision in the quantity differential plan is anticipated shortly.

Chicago — Sales so far this month are on a par with June but business has increased slightly the last few days. This upturn is attributed to necessity of consumers filling in broken stocks. Continuation of recent betterment will place July business above that of June.

Boston—Warehouses have practically completed price revision, but little improvement has appeared in demand. Distributors now quote plates 3.70c; floor plates 5.51c; No. 24 blue annealed sheets 5.31c; No. 24 galvannealed sheets 6.46c. Latest revisions in floor plates and blue annealed sheets represent slight increases over earlier changes.

New York—Reductions in prices of bolts, nuts and rivets practically complete readjustments in warehouse quotations. In addition to lower prices, various changes are made in size extras, reflecting changes in sheet extras adopted by mills last month. All gages of hot-rolled and galvanized sheets are included in the hot-rolled quantity differential plan.

Philadelphia — Steel sales out of warehouse, while slightly heavier, are disappointing, and it is doubtful whether July business will equal June. The latter month's business was off 10 to 15 per cent from May. Some price adjustments still pend.

Buffalo—Warehouses are establishing a new plan of quantity differentials which sets base prices on lots of 400 to 1999 pounds. An extra of 50 cents applies on orders of 100 to 399 pounds, while less than 100 pounds is $1.50 additional. Deductions on larger lots include 20 cents on 2000 to 9999 pounds, 30 cents on 10,000 to 39,999 pounds and 40 cents on 40,000 pounds and over. Sales are steady following recent price revisions.

Baltimore—Price reductions ranging from $1 to $10 a ton has been made here. Largest cuts are $10 on floor plates, $8 on galvanized sheets and $5 on hot-rolled sheets, plates and shapes. Reductions follow recently announced revisions in mill prices. Jobbers have benefited somewhat by the disposition of consumers to hold up mill orders pending clarification of prices.

Cincinnati — Sales are heavier, and the month gives indications of bettering the June volume, contrary to usual seasonal expectations. Lower prices constitute a factor in stimulating sales.

Detroit—In the wake of steel price readjustments warehouse business is lagging, total volume being about

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equal to or slightly less than for last month.

A bright spot is tool steel business, one company estimating sales exceeding the level of last year at this time. This is occasioned by new model programs.

St. Louis — Business is steady, with little apparent effect of lower prices on volume. Small orders from some consumers whose inventories have been depleted make a fair total. Buying for repairs to cotton compresses and gins is reported below average despite a promising crop.

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CASS AT BAGLEY AVE.
GARAGE IN CONNECTION

Steel in Europe

Foreign Steel Prices, Page 85

London — (*By Cable*) — Production of steel and iron in Great Britain continues to decline. Steel ingot output in June was 776,100 tons, compared with 957,000 tons in May, a loss of 180,900 tons. Pig iron in June totaled 541,500 tons, compared with 633,900 tons in May, a decline of 92,400 tons.

Steel exports in June totaled 150,880 tons, compared with 167,522 tons in May, a loss of 16,642. Imports in June were 60,911 tons, compared with 55,665 tons in May, an increase of 5246 tons.

Demand is quiet and consumers are working on their reserves of pig iron and semifinished steel. Specifications are scarce and demand for finished steel is declining but producers have sufficient orders to keep them busy for some time.

The Continent reports slight improvement in inquiries. French exports for first half were 18 per cent lower. Stabilization of prices by the cartel is expected to stimulate buying.

International tin committee has announced details of its buffer-stock scheme, establishing a pool of 10,000 tons of tin in the effort to keep the price of tin between $1000 and $1150 per ton. Stock may be increased to 15,000 tons by resolution. An executive committee will operate the pool and direct sales and purchases through the London metal exchange.

Iron Ore

Iron Ore Prices, Page 86

New York — Leaders in the foreign ore trade here believe the steel industry will have to get back to an ingot operation of around 50 per cent before there will be any awakening in buying. They are hopeful that this rate will be reached some time this Fall.

Meanwhile, trading is at a virtual standstill. Generally speaking, stocks of ore on hand and under order are heavy, and with current steel production still under 30 per cent, consumers are obviously under no pressure to buy.

Importers of foreign ore, appreciating this situation and realizing that only drastic concessions would stimulate interest, with question even then as to the extent, are not making offers. This has resulted in a highly nominal situation, which has now prevailed for weeks.

Manganese ore, for instance, is being quoted nominally at 45c, not including duty, for the higher grades. However, few believe that an actual transaction would result in any such figure. But with consumers showing no interest and sellers making no offerings, no one is sure what price would be fairly representative.

Incidentally, the current nominal figure of 45c is much nearer in line than the other with shipments which are now coming in under contract. Despite opinion to the contrary, some trade leaders assert considerable tonnage was bought at around this higher level. Efforts to cancel tonnage booked at such higher prices were unavailing, although postponement of deliveries was permitted in some cases.

Foreign iron prices have dropped from high levels of several months ago, although currently quoted prices would be subject to further revision on the basis of actual sales, it is believed. Relatively much better demand abroad over the past several months than in this country has tended to stem any too precipitate decline; however, foreign demand is now easing up and sellers are hopeful that business in this country will again resume active proportions before buying becomes too dull on the other side.

Tungsten ore prices, which have provided the most fluctuation in foreign ores so far this year, are apparently moving at the moment on the down side. In June there was a speculative flurry in Europe, stimulated in part by days of continued bombing of Canton by the Japanese, which caused a rather sharp increase in prices, although relatively, it is said, little actual tonnage changed hands. Since then such quotations as have been noted on the other side have been easing, although nominally.

Demand for tungsten ore here remains negligible, and until tool steel makers begin to show interest in ferrotungsten, which accounts for about 75 to 80 per cent of the tungsten ore consumed in this country annually, no appreciable spurt is expected. And with tool steel production still hovering around 10 per cent it may be some time before this interest will develop.

Ferroalloys

Ferroalloy Prices, Page 84

New York — Ferromanganese shipments are fairly steady, but nothing beyond a slight gain is expected in July deliveries as a whole. Sellers are more optimistic regarding August, anticipating some betterment to result from a pickup in steel demand.

Basing Point Article

(*Concluded from Page* 25)

sist order this plan was dropped but differentials over the Pittsburgh base were established, considerably lower than the freight charge from Pittsburgh. There also were differentials based on Chicago as a base.

With the recent announcement by Carnegie-Illinois Steel Corp. of identical base prices at Pittsburgh, Chicago and Birmingham the first step was taken, and when this was followed by new bases at Bethlehem, Pa., Sparrows Point, Md., Claymont, Del., Coatesville, Pa., and other points, with the same price as Pittsburgh, Pittsburgh plus was considered a thing of the past.

Now the question of wages is coming to the front. To many it seems impossible that wages can be continued at present levels with current prices applied to the volume of steel now being made. One company has analyzed the situation and finds that on the basis of 30 per cent operation labor would have to take a cut of 22 per cent in present rates to allow the company to break even on costs.

Many steelmakers believe a reduction is inevitable but no definite action is in view, at least until after the conference of July 25 between the department of labor and representatives of the steel industry, to set minimum wages for companies supplying the government.

Few Additional Changes

Additional contributions to the revamped steel schedule last week were few. At Granite City, Ill., retention of the former differential of $2 a ton over Gary base on sheet prices was officially established by Granite City Steel Co.

This continues the competitive relationship of producers in the Chicago and St. Louis districts as previously, but because of the reduction of Gary prices to a level with Pittsburgh, reduces the spread of Granite City quotations over Pittsburgh base prices on sheets from $4 a ton to $2.

Newport Rolling Mill Co., Newport, Ky., adjusted its sheet prices to a Middletown, O., base. This follows action of American Rolling Mill Co. in setting up its producing site at Middletown as a new basing point.

Whether or not additional new basing points will be established remains to be determined, but with most of the important mill centers already listed as f.o.b. points, little more can be done in that respect.

In some steel consuming districts where the effect of the change in pricing methods has been a substantial saving in delivered costs of steel, chambers of commerce are taking advantage of this in seeking to attract new industries. Buffalo chamber of commerce is making a study of the results of new prices on buyers and producers in that city. Data will be distributed to consumers and manufacturers.

* * *

European Review

(*Concluded from Page* 27)

For the first five months of this year the output was 2,751,000 metric tons, against 3,246,000 tons in 1937, a reduction of 15.3 per cent. Production in April and May was almost at its lowest ebb since 1932. Pig iron figures showed a similar trend. Exports from France also are falling, especially since Great Britain has taken steps to reduce imports into her own market.

Leading iron and steel concerns in that country made good profits on 1937 business, but it is now realized prices quoted for the home market, both by manufacturers and merchants, were too high and discouraged business. It will be noted that no further increase has been made since the franc was devaluated in the middle of May.

Generally speaking, the outlook in France remains clouded with uncertainty. It is stated the efficiency of labor has deteriorated, the hourly output being reduced by 10 per cent in comparison with 1936, according to certain estimates. Production costs are high and show little tendency to decline, and anxiety is felt as to the trend of the political situation when the Chamber meets next fall. To all this must be added the fear of war.

Some interesting developments have occurred in Poland, where the government is exerting control over iron and steel. Steps will be taken to relieve the industry, so far as possible, from the necessity of purchasing foreign supplies, and for intensifying national production. An annual output capacity of approximately 2,000,000 tons is aimed at.

Reports from Scandinavia indicate industrial conditions are satisfactory, and the iron and steel trades are active. Swedish works continue to manufacture high-grade steel, but they also are making inroads with the more common qualities, and the steel entente may endeavor to induce Sweden to join. The Italian iron and steel works are active, and production since the beginning of the year has been distinctly on the increase.

FRANCE TRADES GERMANY IRON ORE FOR COKE

A formal agreement whereby France will sell Germany 7,200,000 tons of Lorraine iron ore annually to be paid for with German coke has been announced by the Ministry of Finance, according to a dispatch from Paris.

Lorraine ore has been exported to Germany for years, though special licenses have been required from the ministry. In 1937 the exports reached 700,000 tons a month, but this year they dropped to 70,000 tons a month. Lorraine ore producers claimed this meant loss of jobs for 30,000 men.

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Ore Imports Are Less

Baltimore — Foreign iron ore arrivals here in May totaled 141,349 tons, compared with 203,126 tons in April. These shipments bring the total for the first five months up to 763,484 tons.

Manganese ore shipments involved 24,380 tons, the lightest monthly figure this year, comparing with 26,430 tons in April which was the smallest up to that time. The heaviest monthly total was in January, amounting to 54,099 tons. The total for the first five months is 196,223 tons.

Barges and Scows Placed

New York — Nashville Bridge Co., Nashville, Tenn., has been awarded a contract for the construction of two steel dump scows for United States engineer, Huntington, W. Va., at $21,935 each. Levingston Shipbuilding Co., Orange, Tex., has the contract for two steel barges for United States engineer, Galveston, Tex., at $17,344.

Hans Hansen Welding Co., Toledo, O., is to construct four 35-foot steel workboats for the United States engineer, Memphis, Tenn., at $6532.23 each.

Metallurgical Coke

Coke Prices, Page 83

Pittsburgh—Beehive furnace coke continues quiet and a slight increase in production is the result of disposition of a fairly large amount of slack held by one producer. Foundry coke orders and releases are more numerous but small in total. Increased demand for some foundry specialties has been noted, with larger requisitions in prospect.

Nonferrous Metals

New York — Optimism remained the dominant note in nonferrous metal markets last week with observers expecting the future trend to be governed by forces of general business. Following heavy coverage by consumers during the preceding two weeks, sales tapered last week with copper, lead and zinc prices unchanged.

Copper—Consumers have covered requirements into October rather fully and are not expected to buy more than enough to cover day-to-day orders for products. Domestic production declined last month while shipments rose, resulting in the first decline in refined stocks since they began to rise in April, 1937. Domestic refined stocks declined 10,838 tons to 358,971 as deliveries to domestic consumers plus exports increased 10,149 tons to 43,303. Electrolytic held unchanged here at 9.75c, Connecticut, while export copper advanced to 9.80c, c.i.f. European ports.

Lead — With sales for July delivery already larger than estimated consumption, fresh demand was spotty. Prices were unchanged at 4.75c, East St. Louis, and 4.90c, New York.

Zinc — Sales were light, mostly for nearby positions, which was expected in view of the well covered position of consumers coupled with the drop in galvanized sheet production. Prime western held at 4.75c, East St. Louis.

Tin — Prices fluctuated widely in line with the changes in Wall street but the market closed with Straits spot at 43.12½c, representing a slight gain over the previous week's close.

Antimony — Sales were confined to case lots with prices unchanged on the basis of 11.25c, New York, for American spot, and nominally 14.00c, duty paid New York, for Chinese spot.

Nonferrous Metal Prices

Spot unless otherwise specified. Cents per pound

July	Copper Electro, del. Conn.	Copper Lake, del. Midwest	Copper Casting, refinery	Straits Tin, New York Spot	Straits Tin, New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 99%	Antimony Amer. Spot. N.Y.	Nickel Cathodes
9	9.75	9.87½	9.27½	42.60	42.90	4.90	4.75	4.75	20.00	11.25	35.00
11	9.75	9.87½	9.27½	42.75	43.10	4.90	4.75	4.75	20.00	11.25	35.00
12	9.75	9.87½	9.27½	42.75	43.05	4.90	4.75	4.75	20.00	11.25	35.00
13	9.75	9.87½	9.27½	43.60	43.80	4.90	4.75	4.75	20.00	11.25	35.00
14	9.75	9.87½	9.27½	42.90	43.20	4.90	4.75	4.75	20.00	11.25	35.00
15	9.75	9.87½	9.27½	43.12½	43.45	4.90	4.75	4.75	20.00	11.25	35.00

MILL PRODUCTS

F.o.b. mill base, cents per lb. except as specified. Copper brass products based on 9.75c Conn. copper

Sheets

Yellow brass (high)	16.37½
Copper, hot rolled	17.87½
Lead, cut to jobbers	8.00
Zinc, 100 lb. base	9.75

Tubes

High, yellow brass	19.12½
Seamless copper	18.37½

Rods

High yellow brass	12.37½
Copper, hot rolled	14.37½

Anodes

Copper, untrimmed	15.12½

Wire

Yellow brass (high)	16.62½

OLD METALS

Nom. Del. buying prices

No. 1 Composition Red Brass

New York	5.50-5.75
Cleveland	6.25-6.50
*Chicago	5.25-5.50
*St. Louis	5.25-5.50

Heavy Copper and Wire

New York, No. 1	7.25-7.50
Cleveland, N. 1	6.75-7.00
*Chicago, No. 1	7.00-7.25
*St. Louis	7.00-7.25

Composition Brass Borings

New York	5.00-5.25

Light Copper

New York	5.75-6.00
Cleveland	5.00-5.25
*Chicago	5.50-5.75
*St. Louis	5.25-5.50

Light Brass

Cleveland	3.00-3.25
*Chicago	3.62½-3.87½
*St. Louis	3.00-3.50

Lead

New York	3.65-3.90
Cleveland	3.25-3.50
Chicago	3.75-3.87½
*St. Louis	3.50-3.75

Zinc

New York	2.00-2.12½
Cleveland	2.00-2.25
*St. Louis	2.25-2.50

Aluminum

Borings, Cleveland	4.75-5.00
Mixed, cast, Cleveland	6.75-7.00
Clips, soft, Cleveland	11.75-12.00
Mixed, cast, St. Louis	6.50-7.00

SECONDARY METALS

Brass ingot, 85-5-5-5, less carloads	10.25
*Standard No. 12 aluminum	13.25-13.50

Equipment

Seattle — Bids for furnishing about 750 tons of copper or aluminum high-voltage wire have been called for opening at Bonneville, Oreg., Aug. 10 by J. D. Ross, Bonneville administrator. Specifications call for 240 miles of conductor with a circumference of 3½ inches to carry power out of Bonneville into Oregon and Washington via Vancouver, Kelso and Aberdeen, Wash., and Portland, Oreg. Clyde Equipment Co., Portland, is apparently low bidder to United States engineer, Portland, for furnishing two hoists for Bonneville dam. Kelso, Wash., has $18,000 available for purchase of fire department equipment and Chelan county, Washington, will open bids at Wenatchee July 18 for furnishing a 60-70-horsepower track laying type full diesel tractor.

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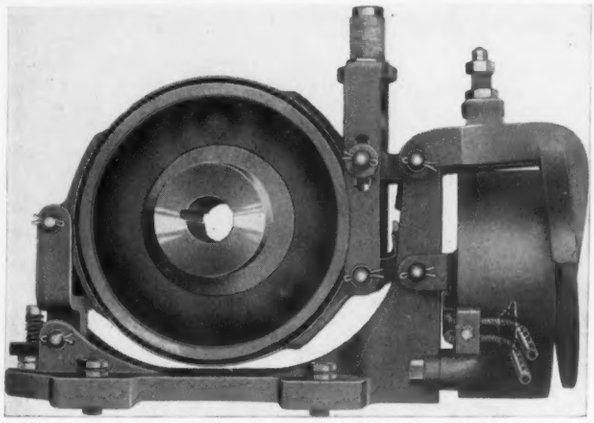

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Construction and Enterprise

Illinois

CHICAGO—Abel Metal & Iron Co. has leased a building containing 5000 square feet at Fortieth and Princeton avenues.

CHICAGO—Carvit Inc., 5050 Kinzie street, has been incorporated with 1000 shares of par value common at $10 per share by C. M. Anderson, G. A. Anderson, I. V. Anderson, to deal in machinery parts. Correspondent: Bissell & Bissell, 11 South LaSalle street.

CHICAGO — Weidenmiller Foundry Corp., 5315 North Ravenswood avenue, has been organized with 100 shares of common stock at $100 per share by E. H. Weidenmiller, P. M. Weidenmiller and C. C. Schy to manufacture, design, buy and sell patterns and castings. Correspondent: Schy & Schy, 134 North LaSalle street.

CHICAGO—United Electric Coal Co., 307 North Michigan avenue, plans new dock on Illinois river for loading coal barges. Cost over $225,000 with conveying, elevating, loading and other mechanical handling equipment.

CHICAGO—Chicago Molded Products Corp., 2145 West Walnut street, will build a new plant, 200 x 300 feet on Kilmar avenue, to cost close to $225,000 with equipment.

JOLIET, ILL.—Pioneer Brewing Co. has started construction of an addition to its brewery to be used as a bottling plant. New bottling machinery will be installed.

ROCKFORD, ILL.—Woodward Governor Co., maker of governors, has started construction of a factory addition. A. Reyner Eastman is architect.

Connecticut

ANSONIA, CONN.—American Brass Co., 58 Liberty street, is erecting a one-story, 155 x 180-foot brick, steel copper rolling mill, to cost approximately $50,000.

Massachusetts

WORCESTER, MASS.—Johnson Steel & Wire Co., 53 Wiser avenue, plans one-story shop addition, 40 x 50 feet, for which general contract has been let to Ivar Petterson, 106 Forest street.

Rhode Island

PAWTUCKET, R. I.—City is preparing plans for waterworks system, including filtration plant. Cost $400,000. PWA has allotted $180,000 for project. T. E. Harding, City hall, is engineer.

New York

CARTHAGE, N. Y.—Taggart Corp., 230 Park avenue, New York, maker of paper stock, plans one-story addition to its plant here, 100 x 120 feet, for storage and distribution. Cost over $60,000 with equipment. General contract has been let to H. K. Ferguson Co., Cleveland.

NEW YORK—Western Electric Co. Inc., 195 Broadway, plans erection of three-story factory branch, storage and distributing plant at Atlanta, Ga., to cost over $65,000 with equipment. W. H. Kattelle, 195 Broadway, New York, is engineer.

NEW YORK—Department of public markets, weights and measures, 139 Centre street, Carl W. Kimball, deputy commissioner, will spend approximately $200,000 for one-story freight terminal at Bronx terminal market, including freight-handling, loading and other equipment.

NEW YORK—Kroder Ruebel Co. Inc., 108 Meeker avenue, Brooklyn, maker of metal fixtures, has plans for three-story plant, 50 x 100 feet, to cost over $75,000 including equipment.

ROCHESTER, N. Y.—Rochester Gas & Electric Co., 89 East avenue, will make improvements and extensions to its steam-electric power plant. Estimated cost $100,000 with equipment.

New Jersey

ATLANTIC CITY, N. J.—Socony-Vacuum Oil Co. Inc., 26 Broadway, New York, is taking bids on general contract for new bulk oil plant here, with installation of steel tanks, pumping units, etc. Cost will exceed $50,000 with equipment.

NEWARK, N. J.—P. Ballentine & Sons, 57 Freeman street, have awarded general contract to Damon G. Douglas, 605 Broad street, for three-story mechanical bottling plant, 60 x 110 feet, and improvements in present bottling division. Estimated cost $100,000 with equipment.

Pennsylvania

CHESTER, PA.—Scott Paper Co., plans expansion and improvement, including installation of new paper-making machine, finishing and auxiliary mechanical equipment. Cost exceeds $300,000.

MEADVILLE, PA.—Meadville Distillery Co., T. Krantz in charge, box 444, is building a distillery, including new warehouse. Cost with equipment estimated at $300,000. F. F. Ballinger Co., Ambridge, Pa., is engineer.

SHARPSVILLE, PA. — Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., plans erection of one-story addition to its Sharon works here for storage and distribution. Cost about $150,000.

Ohio

CINCINNATI—City, C. O. Sherrill, manager, plans installing waterworks system, for which PWA has approved $1,415,076. A. S. Hibbs is superintendent of waterworks.

LAKEMORE, O.—Village plans new waterworks costing $117,000. PWA approved $52,650 grant.

MARION, O.—Old Fort Mills Inc. will double present capacity of its soy bean processing and grinding plant here by erecting an addition and installing additional equipment. Cost about $100,000 with machinery.

SANDUSKY, O.—City, R. J. Wagar, manager, plans installing waterworks system costing $820,000. PWA has allocated $369,000. Greeley & Hansen, 6 North Michigan avenue, Chicago, engineers.

TOLEDO, O.—City plans installing waterworks system at total cost of $8,208,234. Grant of $3,693,705 has been approved by PWA. J. N. Schoonmaker, director of public service.

Michigan

ADRIAN, MICH.—The new foundry building of Magnesium Fabricators Inc., here, is nearing completion and is expected to be in operation early in August.

COOPERVILLE, MICH.—City contemplates construction of a $35,000 sewage plant.

DOWAGIAC, MICH.—Board of public works, Dowagiac, will reconstruct the municipal power plant. Ayres, Lewis, Norris & May, Ann Arbor, Mich., are engineers.

ECORSE, MICH.—Murray Corp., of America is making extensions to its loading dock, open platform and craneway at its plant here. Giffels & Vallet Inc., L. Rossetti, Detroit architects and engineers.

GRAND RAPIDS, MICH.—Reynolds Blower Co. plans one-story factory, 60 x 120 feet, to cost about $50,000 with equipment.

MUSKEGON, MICH.—Commonwealth Pipe Line Co. has started work on a $100,000 program for construction of 21 miles of pipe lines for oil transportation, including 14 miles of 4½-inch lines and seven miles of 4-inch lines. The company also plans construction of a power plant and pumping facilities, probably near Burnips, Mich.

Indiana

GARRETT, IND.—City council will soon take bids for extensions and improvements in municipal electric power plant, including new 500-horsepower watertube boiler, automatic stoker and auxiliary equipment. Cost $45,000. Bevington-Williams Inc., Indiana Pythian building, Indianapolis, consulting engineer.

MICHIGAN CITY, IND. — Pullman-Standard Car Mfg. Co., 79 East Adams street, Chicago, will build a one-story addition to its plant here for production of car wheels. Estimated cost with equipment $400,000.

Maryland

RELAY, MD.—Calvert Distilling Co. will erect a five-story addition for storage and distributing division. General contract has been let to Hays & Nicoulin, 939 Franklin street, Louisville. Estimated cost with equipment $90,000.

District of Columbia

WASHINGTON—Bureau of supplies and accounts, navy department, will take bids until July 26, schedule 3902, electric cable; schedule 3927, shaper; schedule 3957, refrigerating equipment; schedules 3959 and 3968, lathes; schedule 3962, hydraulic shaper; schedule 3969, milling machines; schedule 3970, grinder; schedule 3979, portable pipe threading machines; schedule 3989, steel I-beams; until July 29, schedule 3944, tractors; until Aug. 2, schedule 3951, fuel oil heaters; schedule 3988, electric hoist.

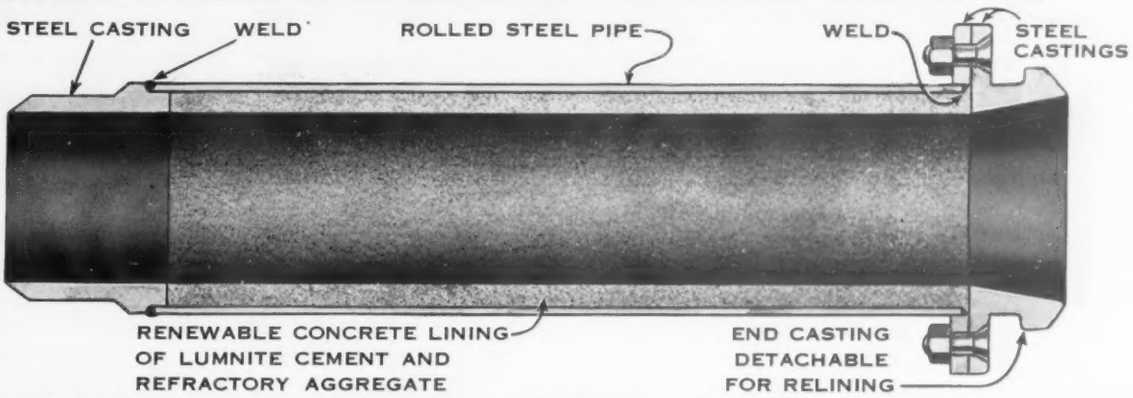
WASHINGTON—Bureau of supplies and accounts, navy department, will take bids until July 22, schedule 3879, one surface grinder; schedule 3880, precision lathe; schedule 3943, grinding machine; schedule 3940, portable ventilating sets, and until July 29, schedule 3932, steel cable.

WASHINGTON—Panama Canal, general purchasing officer, Washington, will take bids until July 22, schedule 3368, for structural steel, wire rope, pig iron, ferrosilicon, ferromanganese, cast iron water pipe fittings, steel safes, steel typewriter tables, and warehouse trucks.

Kentucky

CATLETTSBURG, KY.—Ashland Oil & Refining Co., Ashland, Ky., will soon place additional orders for equipment for its oil refinery near here, where expansion and improvements have been started.

BRASSERT INSULATED BLAST FURNACE BLOW PIPE FOR HIGH TEMPERATURES •



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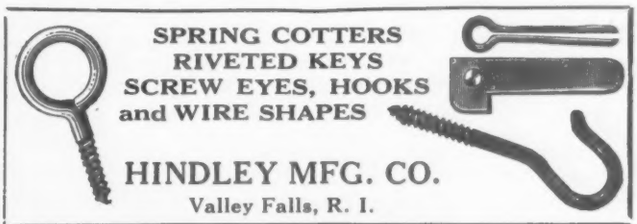

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Florida

KEY WEST, FLA.—Representative Trading Corp., Myer Schlussinger, president, New York, will erect a plant here for manufacture of fertilizer; will construct docks and install machinery. Cost $40,000. J. Fred Dion, representative of local committee.

MIAMI, FLA.—City commission receives bids Aug. 3 for complete power plant, consisting of two 750-kilowatt diesel units with generators, switchboard and all auxiliary equipment. Carl F. Lambert, engineer and consultant, 808 Biscayne building.

TAMPA, FLA.—H. T. Lykes, V. P. Lykes Bros. Inc., will erect $100,000 meat packing building near present plant at Palm river. Modern equipment will be installed. G. A. Miller Inc., 312½ Twiggs street, Tampa, general contractor.

Virginia

NORFOLK, VA.—Carpel Food Products Inc., 402 West Twenty-second street, will establish a $30,000 distributing plant at northeast corner of Hampton and Twenty-sixth streets.

Missouri

KANSAS CITY, MO.—United States Cold Storage Co. is building a one-story, 150 x 150 foot, plant. Cost $200,000.

KANSAS CITY, MO.—Royal Crown Bottlers Inc., recently formed, care of E. M. Dodd, president, United States Cold Storage Co., 500 East Third street, has leased a building for mechanical-bottling, storage and distributing plant. Will expend about $100,000 for equipment.

KANSAS CITY, MO.—Board of education has received PWA grant of $232,217 for construction of an addition to the manual training school to cost $505,000. George C. Tinker is secretary of the board of education. Charles A. Smith, Finance building, is architect.

Arkansas

BRINKLEY, ARK.—Southern Compress Co. contemplates new four-unit compress plant, to cost over $75,000 with presses and other equipment.

Oklahoma

CHEROKEE, OKLA.—City plans extensions and improvements in municipal electric power plant, including installation of additional equipment for increased capacity. Estimated cost $132,000. C. H. Guernsey is city engineer in charge.

Wisconsin

MERRILL, WIS.—Bergman Machine Co. plans immediate construction of a machine shop.

MILWAUKEE—Great Lakes Iron & Metal Corp. has been incorporated to deal in scrap iron, etc., by M. A. Weinresi, I. V. Brossell and N. F. Parenteau.

SHEBOYGAN, WIS.—Steel Products Co. has been incorporated by B. W. Diederich and Oscar L. Wolters.

Minnesota

BUFFALO, MINN.—PWA has allotted $40,000 to the village, E. L. Thomeson, recorder, for construction of sewage disposal plant. Banister Engineering Co., 1586 University avenue, St. Paul, consulting engineer.

CROSS LAKE, MINN.—PWA has allotted $66,800 to United States department of interior for improvement of sewer and water system and electric system at Red Lake Indian Agency here. W. B. Fry, Washington, is purchasing officer.

DULUTH—Kansas Pipe Line & Gas Co., L. E. Fischer, Chicago, president, has made preliminary application to RFC for loan of $20,000,000 to finance construction of natural gas pipeline from Kansas to Duluth and the Iron Range in Minnesota.

THIEF RIVER FALLS, MINN.—PWA has allotted $58,500 to the city, S. M. Olness, clerk, for construction of sewage treatment plant to cost $130,000. Lium & Burdick, YMCA building, Grand Forks, N. Dak., consulting engineers.

WORTHINGTON, MINN.—City has engaged Ralph D. Thomas & Associates, consulting engineers, 1200 Second avenue, South, Minneapolis, to make preliminary plans and surveys for a municipal light and power plant. N. D. Miller is city clerk.

Texas

HOUSTON, TEX.—Walter Ruska & Co. Inc., manufacturer of scientific instruments, has let general contract for new one-story plant, 40 x 85 feet, cost of which is estimated at $45,000 with equipment.

North Dakota

WAHPETON, N. DAK.—State board of administration, A. B. Welch, executive secretary, Bismarck, N. Dak., will receive bids until July 25 for furnishing machinery and equipment for the new addition to the trades building at the state school of science at Wahpeton as follows: auto mechanics shop equipment, sheet metal shop equipment and machine shop equipment.

South Dakota

STURGIS, S. DAK.—PWA has allotted grant and loan to the city, M. U. Kerper, auditor, for construction of sewage disposal plant to cost $136,364. Dakota Engineering Co., Western building, Mitchell, S. Dak., consulting engineer.

Nebraska

BLAIR, NEBR.—City, P. C. Sorenson, mayor, has filed application with PWA for grant to construct power plant improvements costing $117,000. Black & Veatch, 4706 Broadway, Kansas City, Mo., consulting engineers.

YORK, NEBR.—City council has authorized filing of application with PWA for a $213,750 grant to construct municipal light and power plant to cost $475,000.

Iowa

ALLISON, IOWA—REA has allotted $128,000 to Butler County Rural Electric Co-operative, L. G. Scallon, secretary, to construct 134 miles of transmission lines in Butler, Bremer and Floyd counties, K. R. Brown, 902 Valley Bank building, Des Moines, Iowa, consulting engineer.

CLARION, IOWA—REA has allotted $215,000 to Wright County Rural Electric Co-operative, Charles J. Loviren, president, to construct 174 miles of transmission lines in Wright, Hamilton, Webster, Hancock and Franklin counties.

ELDORA, IOWA—REA has allotted $147,000 to Hardin County Rural Electric Co-operative, Ben Jaspers, project superintendent, to construct 148 miles of transmission lines in Hardin county.

GARNER, IOWA—REA has allotted $215,000 to the Hancock County Rural Electric Co-operative, V. L. Hein, project superintendent, for construction of about 232 miles of rural transmission lines in Hancock, Worth and Cerro Gordo counties. K. R. Brown, 902 Valley Bank building, Des Moines, consulting engineer.

HUMBOLDT, IOWA—REA has allotted $175,000 to Humboldt County Rural Electric Co-operative to construct 165 miles of transmission lines in Humboldt and Kossuth counties.

GRUNDY CENTER, IOWA—REA has allotted $288,000 to the Grundy County Electric association, Clifford Green, president, for construction of 283 miles of rural transmission lines in Grundy, Marshall, Tama and Black Hawk counties.

GUTHRIE CENTER, IOWA—REA has allotted $195,000 to Guthrie County Rural Electric Co-operative association to construct 180 miles of transmission lines in Guthrie, Audubone and Dallas counties.

JEFFERSON, IOWA—REA has allotted $147,000 to the Greene County Rural Electric Co-operative, John E. Jaquis, project superintendent, for construction of 153 miles of rural transmission lines in Greene and Boone counties. K. R. Brown, 902 Valley Bank building, Des Moines, Iowa, consulting engineer.

MARSHALLTOWN, IOWA — Fisher Governor Co., manufacturer of governors, pressure regulators, steam traps, etc., has awarded contract to C. F. Reimer & Co. for construction of a one-story factory addition, 42 x 90 feet. R. H. Vandercook is architect.

MUSCATINE, IOWA — First Iowa Hydro-Electric Co-operative, Harry J. Strong, manager, will apply for PWA grant and loan to construct a dam and hydroelectric plant costing $3,500,000. Burns & McDonnell Engineering Co., 107 West Linwood boulevard, Kansas City, Mo., consulting engineer.

Colorado

DENVER — State executive council plans early construction of new state-owned steam electric generating plant, costing about $700,000 with equipment. James Merrick, superintendent of state buildings, is in charge.

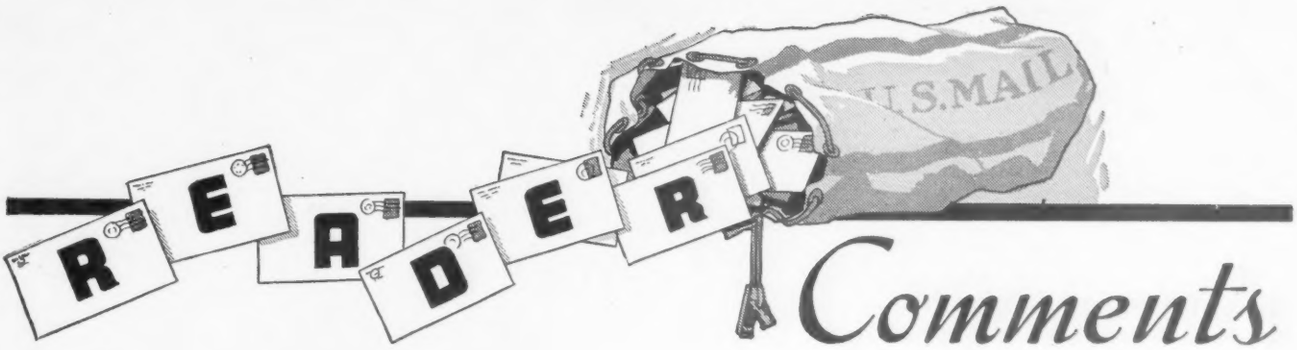
Pacific Coast

GLENDALE, CALIF. — City council plans new steam-electric municipal power plant, cost of which is estimated at $1,500,000. Carl Heinze is engineer for project.

LOS ANGELES — Western Pattern Works has been organized with capital of $10,000. Directors are: Charles G. and Anna Jurack, and Everett R. James, all of Los Angeles. Mr. James, 4677 Hollywood boulevard, represents the company.

ABERDEEN, WASH.—W. B. Knauer, manager, Grays Harbor Chair & Mfg. Co., announces plans for a $50,000 plant addition to be modernly equipped.

BREMERTON, WASH. — Bureau of yards and docks, navy department, is securing total appropriation of $5,864,000 for extensions and improvements in Puget Sound navy yard, Bremerton. Program includes extensions and improvements in power plant, extensions and betterments in electrical distribution system, new drydock, including installation of heavy-duty motors and controls, electric cranes and hoists, conveyors and other equipment. (Noted June 13)



Comments

Readers are invited to comment upon articles, editorials, reports, prices or other editorial material appearing in STEEL. The editors cannot publish unsigned communications, but at their discretion may permit a writer to use a pseudonym when a bona fide reason exists for withholding his identity. Letters should be brief—preferably not exceeding 250 words.

New Bases Cause Problems

To the Editor:

It is quite evident the recent price reduction of steel, the naming of new basing points and the equalizing of prices at some previous basing points has aroused not only the interest of holders of steel stock but men in various walks of life as to the present effect and future prospects of progress in those steel manufacturing centers where steel producers have not gone the limit to take care of their district customers to the same extent as their competitors have taken care of their customers by making their mills basing points for the various steel products they produce.

As a consumer of various shapes and sizes of finished steel we have been frequently asked for our opinion. Located close to Youngstown mills, naturally what the mill owners do or do not do has or ought to have a favorable or unfavorable effect on our business to the same extent as it would on the consumer of finished steel within the city limits. It is such a far reaching problem that to be better understood we will confine ourselves to the question by considering only two steel producing centers, Youngstown and Pittsburgh.

To a consumer located in the Youngstown district the Pittsburgh basing point method of pricing steel was never sound. It has always been unfair and discriminating against the Youngstown district consumers of steel and never could have been maintained had it not been for the magnitude, power and influence of those who dominated the industry. A manufacturing consumer of certain shapes of steel who is now located in the Youngstown district and purchases his steel requirements from local mills must pay the Pittsburgh base price plus the freight rate from Pittsburgh to Youngstown. Then, to sell his finished product in the city of Pittsburgh, to compete with his Pittsburgh competitors, it is necessary to allow the freight rate to Pittsburgh.

With the added basing points and price equalizing at previous basing points the unfavorable competitive condition is much intensified, compelling a Youngstown district manufacturer to bear added expense which can only retard progress or eventually cause the closing of small factories or their moving to more favorable locations.

The Pittsburgh mills make their district a basing point and the distance from the mills in which the basing point applies is quite extended. In so doing they reap the benefit of this profitable business on which they have no freight to pay to meet distant basing point prices. Also, it has the added advantage of encouraging industries to locate in their district.

In contrast to the Pittsburgh plan the Youngstown mill owners seem to be quite willing to allow freight to Pittsburgh consumers and appreciate the profitable tonnage of their own district consumers to the extent that they add Pittsburgh freight rate. It looks as though the Youngstown consumer of steel products gets hit hard both coming and going. It is really hard to understand why any manufacturer will help put out of business a profitable account at his own door and in so doing detract from his own profit by paying the freight to his local manufacturers' distant competitors.

The future progress of Youngstown, or in fact any large steel producing center, depends largely on the attitude of the management. Recent events in the steel industry have confused those interested but it is a time for resolute action, to break the fetters that have held the industry in their power in the past.

C. E. HOLT

Secretary and Manager,
Leetonia Tool Co.,
Leetonia, O.

Nearly Half Over 50

To the Editor:

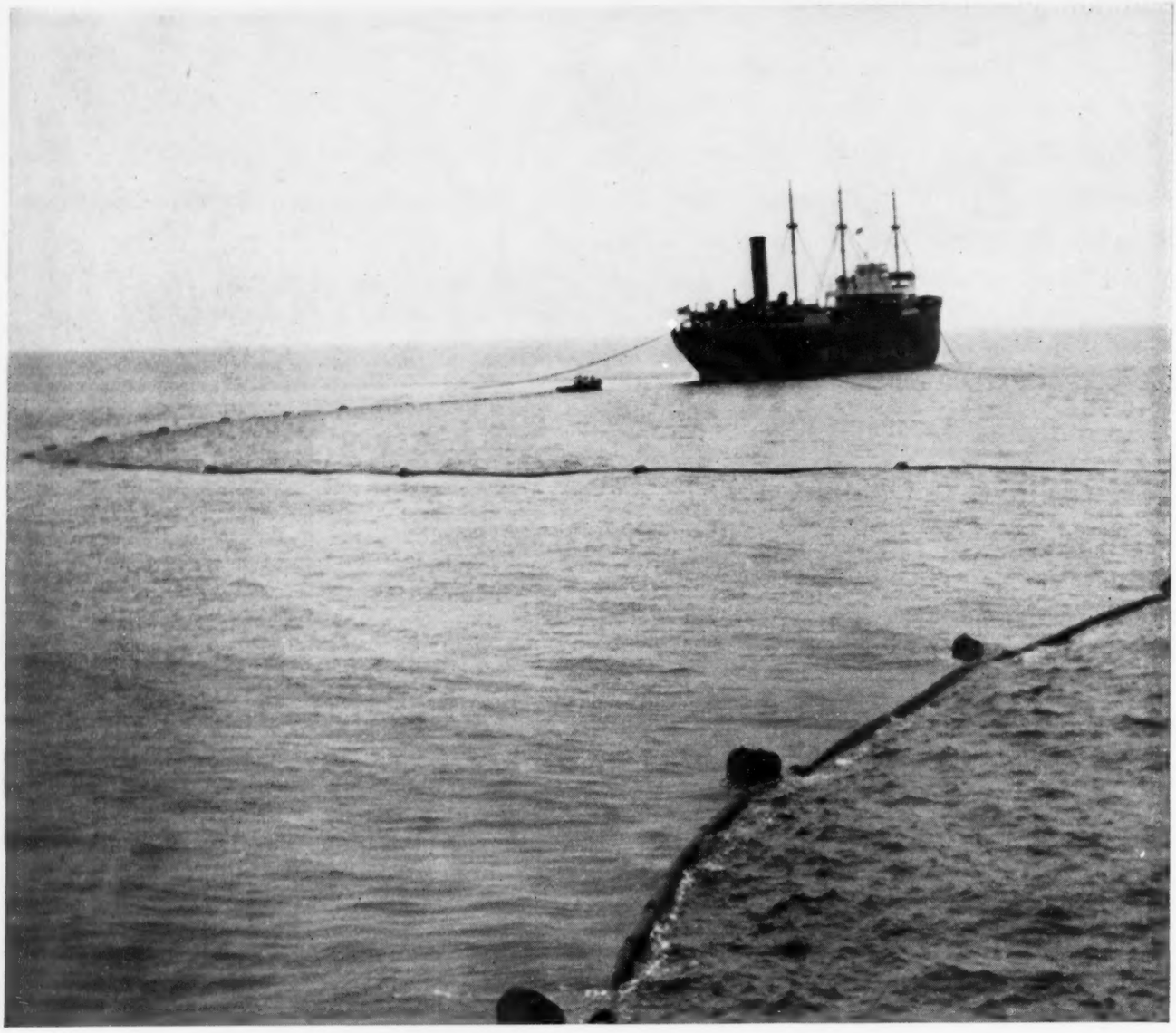
It has been our experience that employes over 45 years have been found very satisfactory, and we have never felt obliged to set an age limit. Naturally, a man sometimes in later years develops afflictions which necessitate his being, in most cases, pensioned.

July 1, 1938, we had a total of 2371 employes on our payroll. Of this number 1109 were over 40 years of age. This is 48 per cent of our force, and an average age of 51 years.

We have 326 employes who have been with the company 20 years or longer. Of this number 251 are members of our Veterans' Guild, and receive a button according to the length of service with the company. Naturally, we feel that when a man has been with the company over 20 years that he feels more deeply his responsibility to the company of which he is a part.

G. D. SPACKMAN

General Superintendent,
Lukens Steel Co.,
Coatesville, Pa.



A THOUSAND-FOOT RUBBER "STRAW" FOR A 3,000,000-GALLON DRINK

A typical example of Goodrich improvement in rubber

A CALIFORNIA oil field had plenty of oil but no way to dispose of it. Tankers—the only economical way to ship from this point—could not get nearer than a thousand feet to the longest pier.

A pipe line from the pier was impossible because at this point along the coast harbor regulations prohibit any obstruction. Could hose be made to carry huge volumes of oil a quarter of a mile, stand the terrific pumping pressures necessary—and still be light enough to be floated out to a tanker, and back, out of the way, when loading was completed?

The problem was discussed with Goodrich. All oil hose up to that time had been used for short-distance pumping. Goodrich engineers went to work, developed a stronger and yet lighter hose of 8 inches inside diameter. One end of the hose was towed out from shore by a launch, connected aboard the tanker, and the pumps started. It was a complete success—a 3,000,000-gallon tanker was loaded, ready to sail in 10 hours! This Goodrich hose loaded 630,000,000 gallons before replacement was needed.

With 32,000 rubber items to their credit, there are few problems Goodrich engineers have not had to face. Before you decide any problem involving rubber is impossible to solve—before you decide the life you have been getting out of any rubber product is all you can expect—find out what Goodrich can do about it. Your Goodrich distributor can help you. The B. F. Goodrich Company, Mechanical Rubber Goods Division, Akron, Ohio.

Goodrich

ALL *products problems* IN RUBBER